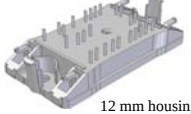
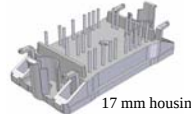


flow PFC 0		600 V / 2 x 15 A / 50 kHz	
Features - Vincotech clip-in housing - Compact and low inductance design - Suitable for Interleaved topology - Suitable for current sensing in collector or in emitter - Ultrafast boost IGBT and FRED		flow 0 housing  	
Target Applications - PFC for welding - PFC for SMPS - PFC for motor drives - PFC for UPS - PFC for battery charger		Schematic (F0/FZ)062TA030FB FZ062TA030FB01 FZ062TA030FB02 (F0/FZ)062TA030FB03	
Types (F0/FZ)062TA030FB; without SCR, current sense in collector - FZ062TA030FB01; with SCR, current sense in collector - FZ062TA030FB02; without SCR, current sense in emitter (F0/FZ)062TA030FB03; with SCR, current sense in emitter			

Maximum Ratings

 $T_j=25^{\circ}\text{C}$, unless otherwise specified

Parameter	Symbol	Condition	Value	Unit
Input Rectifier Diode				
Repetitive peak reverse voltage	V_{RRM}		1600	V
DC forward current	I_F	$T_j=T_{jmax}$ $T_h=80^{\circ}\text{C}$ $T_c=80^{\circ}\text{C}$	35	A
Surge forward current	I_{FSM}	$t_p=10\text{ms}$ $T_j=25^{\circ}\text{C}$	250	A
I2t-value	i^2t		310	A ² s
Power dissipation per Diode	P_{tot}	$T_j=T_{jmax}$ $T_h=80^{\circ}\text{C}$ $T_c=80^{\circ}\text{C}$	40	W
Maximum Junction Temperature	T_{jmax}		150	$^{\circ}\text{C}$
Input Rectifier Thyristor				
Repetitive peak reverse voltage	V_{RRM}		800	V
DC forward current	I_F	$T_j=T_{jmax}$ $T_h=80^{\circ}\text{C}$ $T_c=80^{\circ}\text{C}$	34	A
Surge forward current	I_{FSM}	$t_p=10\text{ms}$ $T_j=25^{\circ}\text{C}$	250	A
I2t-value	i^2t		310	A ² s
Power dissipation per Thyristor	P_{tot}	$T_j=T_{jmax}$ $T_h=80^{\circ}\text{C}$ $T_c=80^{\circ}\text{C}$	44	W
Maximum Junction Temperature	T_{jmax}		150	$^{\circ}\text{C}$

Maximum Ratings

 $T_J=25^{\circ}\text{C}$, unless otherwise specified

Parameter	Symbol	Condition	Value	Unit
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PFC IGBT

Collector-emitter break down voltage	V_{CE}		600	V
DC collector current	I_C	$T_J=T_{Jmax}$ $T_h=80^{\circ}\text{C}$ $T_c=80^{\circ}\text{C}$	19	A
Repetitive peak collector current	I_{Cpulse}	t_p limited by T_{Jmax}	90	A
Power dissipation per IGBT	P_{tot}	$T_J=T_{Jmax}$ $T_h=80^{\circ}\text{C}$ $T_c=80^{\circ}\text{C}$	57	W
Gate-emitter peak voltage	V_{GE}		+/- 20	V
Maximum Junction Temperature	T_{Jmax}		150	$^{\circ}\text{C}$

C.T. Inverse diode

Peak Repetitive Reverse Voltage	V_{RRM}	$T_J=25^{\circ}\text{C}$	600	V
DC forward current	I_F	$T_J=T_{Jmax}$ $T_h=80^{\circ}\text{C}$ $T_c=80^{\circ}\text{C}$	8	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{Jmax}	16	A
Power dissipation per Diode	P_{tot}	$T_J=T_{Jmax}$ $T_h=80^{\circ}\text{C}$ $T_c=80^{\circ}\text{C}$	14	W
Maximum Junction Temperature	T_{Jmax}		175	$^{\circ}\text{C}$

PFC Diode

Peak Repetitive Reverse Voltage	V_{RRM}	$T_J=25^{\circ}\text{C}$	600	V
DC forward current	I_F	$T_J=T_{Jmax}$ $T_h=80^{\circ}\text{C}$ $T_c=80^{\circ}\text{C}$	20	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{Jmax}	40	A
Power dissipation	P_{tot}	$T_J=T_{Jmax}$ $T_h=80^{\circ}\text{C}$ $T_c=80^{\circ}\text{C}$	31	W
Maximum Junction Temperature	T_{Jmax}		600	$^{\circ}\text{C}$

PFC Shunt

DC forward current	I_F	$T_c=25^{\circ}\text{C}$	31,6	A
Power dissipation per Shunt	P_{tot}	$T_c=25^{\circ}\text{C}$	10	W

DC link Capacitor

Max.DC voltage	V_{MAX}	$T_c=25^{\circ}\text{C}$	500	V
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Thermal Properties

Storage temperature	T_{stg}		-40...+125	$^{\circ}\text{C}$
Operation temperature under switching condition	T_{op}		-40...+(T_{Jmax} - 25)	$^{\circ}\text{C}$

Insulation Properties

Insulation voltage	V_{IS}	$t=2s$ DC voltage	4000	V
Creepage distance			min 12,7	mm
Clearance		17 mm housing 12 mm housing	min 12,7 min 8,89	mm

Characteristic Values

Parameter	Symbol	Conditions					Value			Unit
			$V_{GE}[V]$ or $V_{GS}[V]$	$V_r[V]$ or $V_{CE}[V]$ or $V_{DS}[V]$	$I_c[A]$ or $I_F[A]$ or $I_D[A]$	T_j	Min	Typ	Max	
Input Rectifier Diode										
Forward voltage	V_F				30	$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		1,16 1,11	1,4	V
Threshold voltage (for power loss calc. only)	V_{to}				30	$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		0,9 0,77		V
Slope resistance (for power loss calc. only)	r_t				30	$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		9 12		mΩ
Reverse current	I_r			1500		$T_j=25^{\circ}C$ $T_j=150^{\circ}C$			0,02 2	mA
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness≤50μm λ = 1 W/mK						1,72		K/W

Input Rectifier Thyristor

Forward voltage	V_F				30	$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		1,25 1,22	1,6	V
Threshold voltage (for power loss calc. only)	V_{to}				30	$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		0,93 0,82		V
Slope resistance (for power loss calc. only)	r_t				30	$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		0,011 0,014		mΩ
Reverse current	I_r			800		$T_j=25^{\circ}C$ $T_j=125^{\circ}C$			0,05 2	mA
Gate controlled delay time	t_{GD}	$I_g=0,5A$ $di/dt=0,5A/us$		$V_D=1/2V_{drn}$		$T_j=25^{\circ}C$			2	μs
Gate controlled rise time	t_{GR}	$I_g=0,2A$ $di/dt=0,2A/us$				$T_j=25^{\circ}C$		<1		μs
Critical rate of rise of off-state voltage	$(dv/dt)_{cr}$			$V_D=2/3V_{drn}$		$T_j=125^{\circ}C$			500	V/μs
Critical rate of rise of on-state current	$(di/dt)_{cr}$	$I_g=0,2A$ $f=50Hz$		$V_D=2/3V_{drn}$	40	$T_j=125^{\circ}C$			150	A/μs
Circuit commutated turn-off time	t_q	$V_D=2/3V_{drn}$ $t_p=200us$		100	26	$T_j=125^{\circ}C$		150		μs
Holding current	I_H	$V_D=6V$				$T_j=25^{\circ}C$			50	mA
Latching current	I_L	$t_p=10us$ $I_g=0,2A$				$T_j=25^{\circ}C$			90	mA
Gate trigger voltage	V_{GT}	$V_D=6V$				$T_j=25^{\circ}C$ $T_j=40^{\circ}C$			1,3 1,6	V
Gate trigger current	I_{GT}	$V_D=6V$				$T_j=25^{\circ}C$ $T_j=40^{\circ}C$	11		28 50	mA
Gate non-trigger voltage	V_{GD}			$V_D=1/2V_{drn}$		$T_j=125^{\circ}C$			0,2	V
Gate non-trigger current	I_{GD}			$V_D=1/2V_{drn}$		$T_j=125^{\circ}C$			1	mA
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness≤50μm λ = 1 W/mK						1,57		K/W

PFC IGBT

Gate emitter threshold voltage	$V_{GE(th)}$		V_{ce}		0,0005	$T_j=25^{\circ}C$ $T_j=125^{\circ}C$	3	4	5	V
Collector-emitter saturation voltage	$V_{CE(sat)}$				30	$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		2,89 3,43	3,3	V
Collector-emitter cut-off	I_{CES}		0		600	$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		3,43	30	mA
Gate-emitter leakage current	I_{GES}		20		0	$T_j=25^{\circ}C$ $T_j=125^{\circ}C$			0,2	nA
Integrated Gate resistor	R_{gint}							n.a.		Ω
Turn-on delay time	$t_{d(on)}$	$R_{goff}=2\Omega$ $R_{gon}=2\Omega$	15	400	18	$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		15,8 15,4		ns
Rise time	t_r					$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		6,4 7,4		
Turn-off delay time	$t_{d(off)}$					$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		107,6 120,4		
Fall time	t_f					$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		4,2 6,6		
Turn-on energy loss per pulse	E_{on}					$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		0,2197 0,4012		mWs
Turn-off energy loss per pulse	E_{off}					$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		0,1983 0,3086		
Input capacitance	C_{ies}	$f=1MHz$	0	25		$T_j=25^{\circ}C$		1500		pF
Output capacitance	C_{oss}							150		
Reverse transfer capacitance	C_{iss}							92		
Gate charge	Q_{Gate}		15	480	30	$T_j=25^{\circ}C$		92		nC
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness≤50μm λ = 1 W/mK						1,22		K/W

Characteristic Values

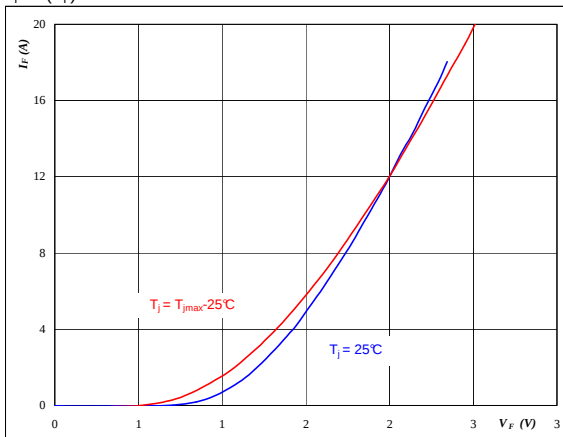
Parameter	Symbol	Conditions					Value			Unit
			$V_{GE}[V]$ or $V_{GS}[V]$	$V_i[V]$ or $V_{CE}[V]$ or $V_{DS}[V]$	$I_C[A]$ or $I_F[A]$ or $I_D[A]$	T_j	Min	Typ	Max	
C.T. Inverse diode										
Diode forward voltage	V_F					$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		1,66 1,61		V
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness≤50um $\lambda = 1 \text{ W/mK}$						5,12		K/W
PFC Diode										
Forward voltage	V_F				15	$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		2,03 1,5	2,7	V
Reverse recovery time	t_{rm}	$R_{goff}=2\Omega$	15	400	18	$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		12 19,4		μA
Peak recovery current	I_{RRM}	$R_{goff}=2\Omega$	15	400	18	$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		40,539 61,079		A
Reverse recovery time	t_{rr}					$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		12 19,4		ns
Reverse recovery charge	Q_{rr}					$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		0,2368 0,6337		μC
Reverse recovered energy	E_{rec}					$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		0,0526 0,1334		mWs
Peak rate of fall of recovery current	$di(rec)_{max}/dt$					$T_j=25^{\circ}C$ $T_j=125^{\circ}C$		13672 12699		A/ μs
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness≤50um $\lambda = 1 \text{ W/mK}$						2,29		K/W
PFC Shunt										
R1 value	R						9,4	10	10,6	m Ω
Temperature coefficient	t_c	20°C to 60°C						< 50		ppm/K
Internal heat resistance	R_{thi}							< 6,5		K/W
Inductance	L							< 3		nH
DC link Capacitor										
C value	C						480	540	600	nF
Thermistor										
Rated resistance	R					$T_j=25^{\circ}C$		22		k Ω
Deviation of R100	$\dot{O}R/R$	R25=22 K Ω				$T_j=100^{\circ}C$	-5		5	%
Power dissipation	P					$T_j=25^{\circ}C$			210	mW
Power dissipation constant						$T_j=25^{\circ}C$		3,5		mW/K
B-value	$B_{(25/50)}$	Tol. $\pm 3\%$				$T_j=25^{\circ}C$		3940		K
B-value	$B_{(25/100)}$	Tol. $\pm 3\%$				$T_j=25^{\circ}C$		4000		K

PFC Switch & C.T. Inverse Diode

Figure 1 Inverse diode

Typical diode forward current as a function of forward voltage

$$I_F = f(V_F)$$

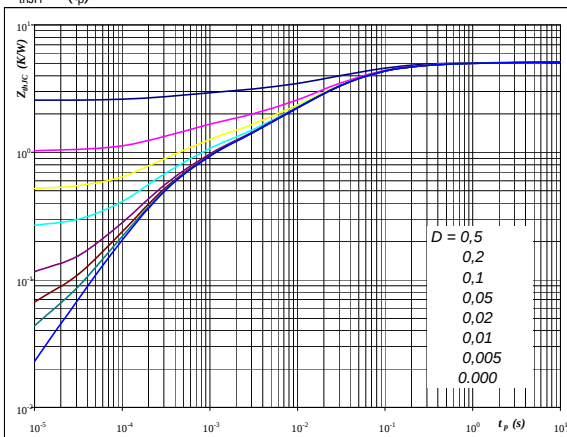


$$t_p = 250 \mu s$$

Figure 2 Inverse diode

Diode transient thermal impedance as a function of pulse width

$$Z_{thJH} = f(t_p)$$



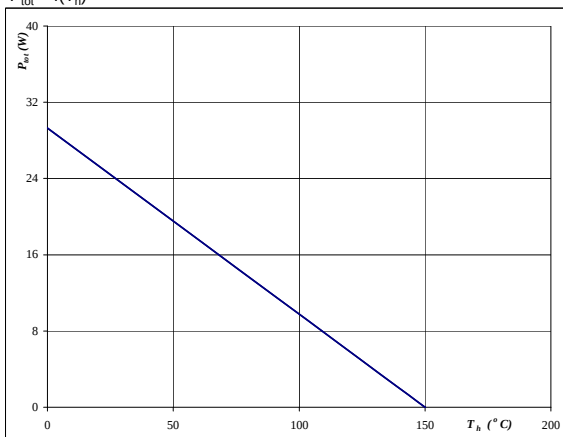
$$D = t_p / T$$

$$R_{thJH} = 5,12 \text{ K/W}$$

Figure 3 Inverse diode

Power dissipation as a function of heatsink temperature

$$P_{tot} = f(T_h)$$

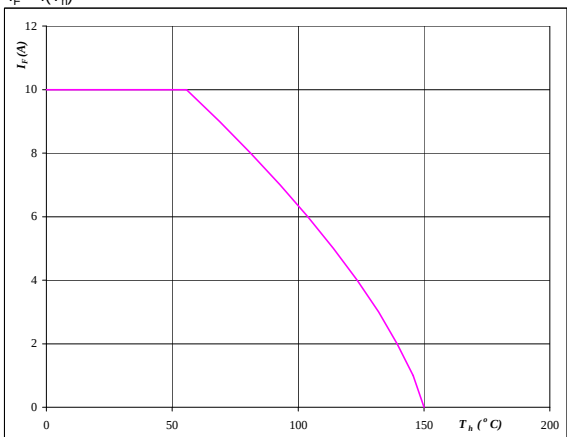


$$T_J = 150 \text{ } ^\circ\text{C}$$

Figure 4 Inverse diode

Forward current as a function of heatsink temperature

$$I_F = f(T_h)$$



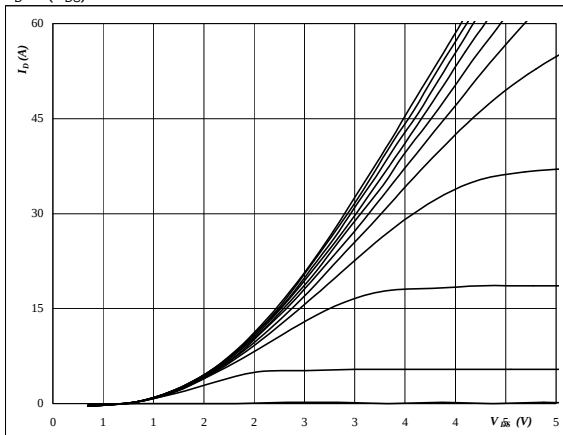
$$T_J = 150 \text{ } ^\circ\text{C}$$

PFC

Figure 1 PFC SWITCH

Typical output characteristics

$I_D = f(V_{DS})$

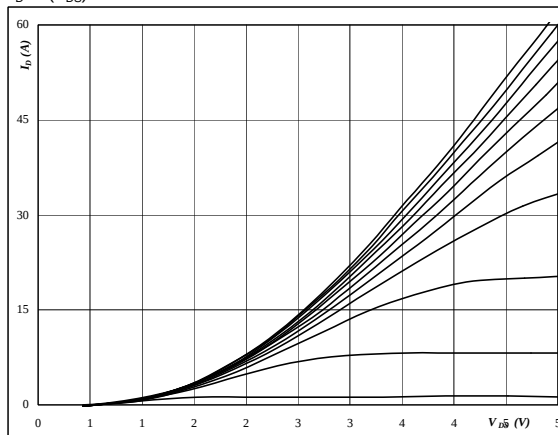


$t_p = 250 \mu s$
 $T_j = 25^\circ C$
 V_{GS} from 5 V to 15 V in steps of 1 V

Figure 2 PFC SWITCH

Typical output characteristics

$I_D = f(V_{DS})$

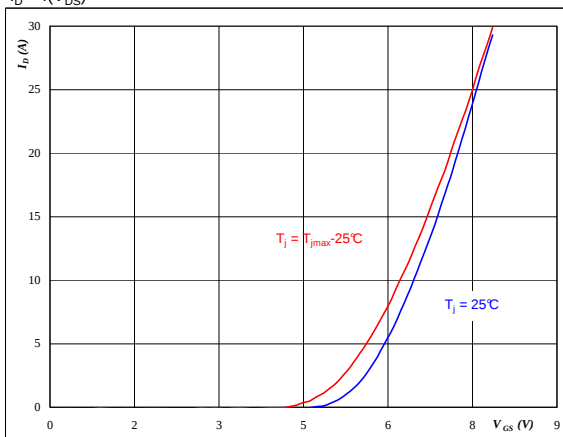


$t_p = 250 \mu s$
 $T_j = 125^\circ C$
 V_{GS} from 5 V to 15 V in steps of 1 V

Figure 3 PFC SWITCH

Typical transfer characteristics

$I_D = f(V_{GS})$

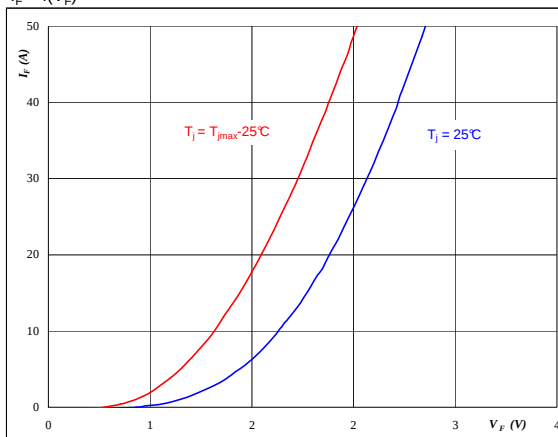


$t_p = 250 \mu s$
 $V_{DS} = 10 V$

Figure 4 PFC FRED

Typical diode forward current as a function of forward voltage

$I_F = f(V_F)$



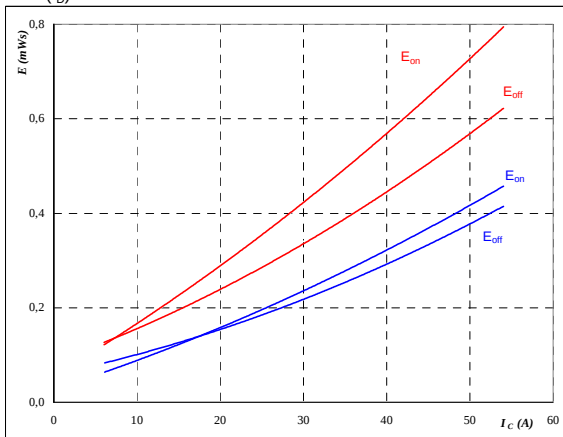
$t_p = 250 \mu s$

PFC

Figure 5 PFC SWITCH

Typical switching energy losses
 as a function of collector current

$$E = f(I_D)$$



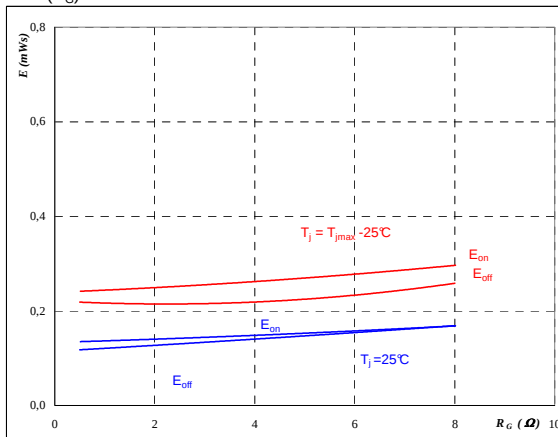
inductive load

$T_J =$	25/125	°C
$V_{DS} =$	400	V
$V_{GS} =$	15	V
$R_{gon} =$	4	Ω
$R_{goff} =$	4	Ω

Figure 6 PFC SWITCH

Typical switching energy losses
 as a function of gate resistor

$$E = f(R_G)$$



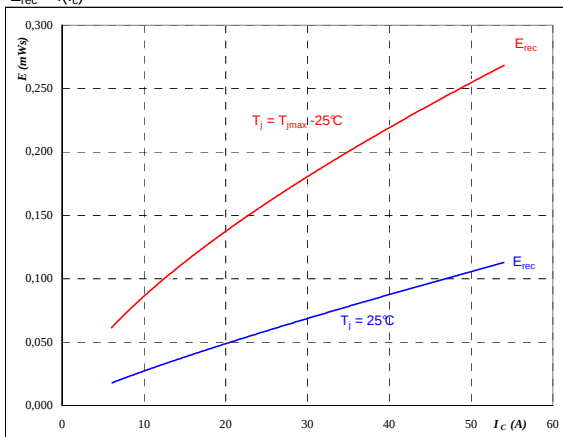
inductive load

$T_J =$	25/125	°C
$V_{DS} =$	400	V
$V_{GS} =$	15	V
$I_D =$	18	A

Figure 7 PFC SWITCH

Typical reverse recovery energy loss
 as a function of collector (drain) current

$$E_{rec} = f(I_C)$$



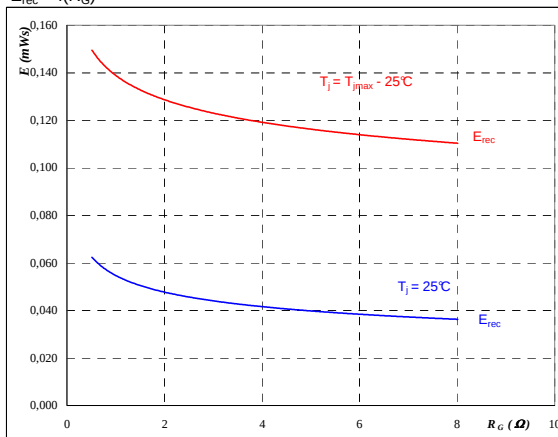
inductive load

$T_J =$	25/125	°C
$V_{DS} =$	400	V
$V_{GS} =$	15	V
$R_{gon} =$	4	Ω
$R_{goff} =$	4	Ω

Figure 8 PFC SWITCH

Typical reverse recovery energy loss
 as a function of gate resistor

$$E_{rec} = f(R_G)$$



inductive load

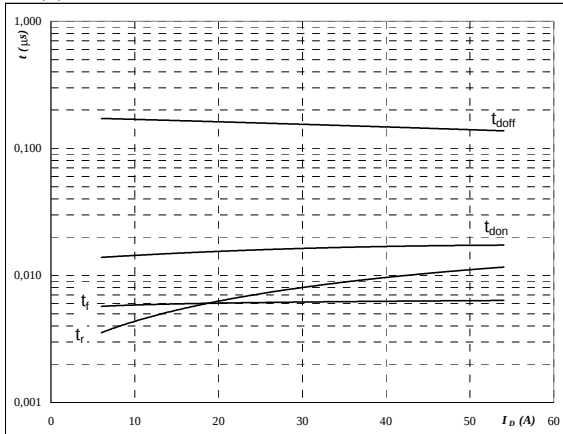
$T_J =$	25/125	°C
$V_{DS} =$	400	V
$V_{GS} =$	15	V
$I_D =$	18	A

PFC

Figure 9 PFC SWITCH

Typical switching times as a function of collector current

$$t = f(I_C)$$



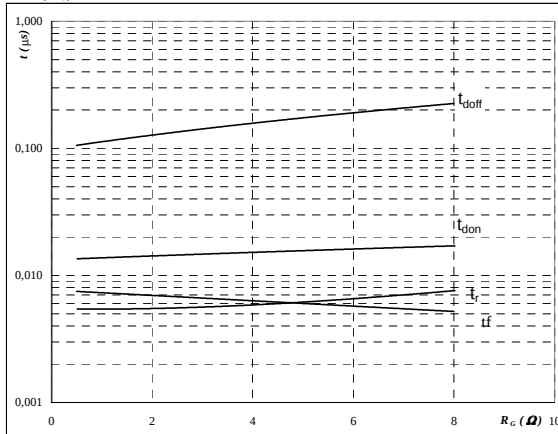
inductive load

$T_J =$	125	°C
$V_{DS} =$	400	V
$V_{GS} =$	15	V
$R_{gon} =$	4	Ω
$R_{goff} =$	4	Ω

Figure 10 PFC SWITCH

Typical switching times as a function of gate resistor

$$t = f(R_G)$$



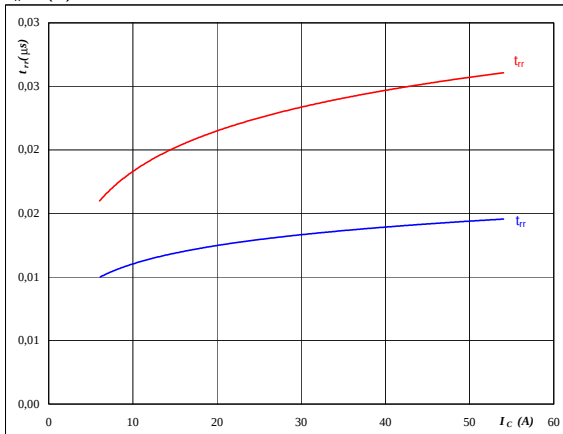
inductive load

$T_J =$	125	°C
$V_{DS} =$	400	V
$V_{GS} =$	15	V
$I_C =$	18	A

Figure 11 PFC FRED

Typical reverse recovery time as a function of collector current

$$t_{rr} = f(I_C)$$

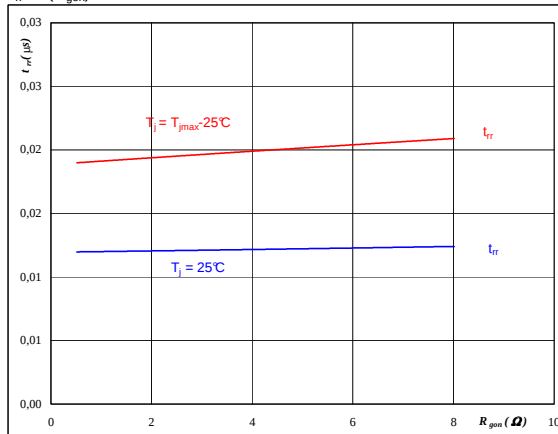


$T_J =$	25/125	°C
$V_{CE} =$	400	V
$V_{GE} =$	15	V
$R_{gon} =$	4	Ω

Figure 12 PFC FRED

Typical reverse recovery time as a function of IGBT turn on gate resistor

$$t_{rr} = f(R_{gon})$$



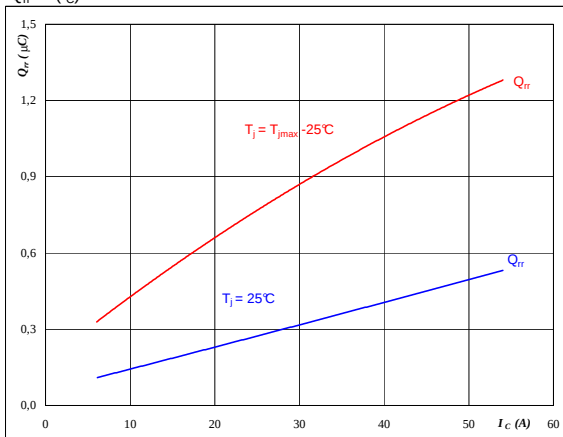
$T_J =$	25/125	°C
$V_R =$	400	V
$I_F =$	18	A
$V_{GS} =$	15	V

PFC

Figure 13 PFC FRED

Typical reverse recovery charge as a function of collector current

$$Q_{rr} = f(I_C)$$

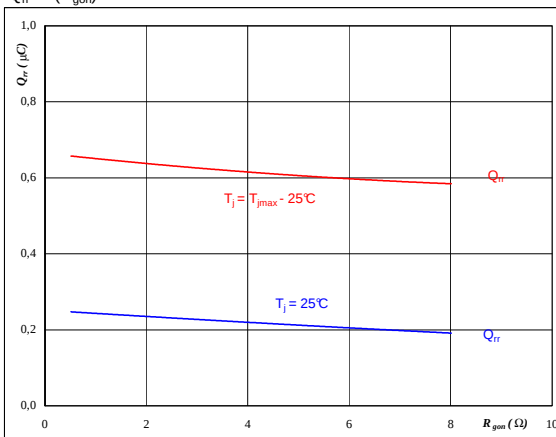


$T_j = 25/125^\circ\text{C}$
 $V_{CE} = 400\text{ V}$
 $V_{GE} = 15\text{ V}$
 $R_{gon} = 4\ \Omega$

Figure 14 PFC FRED

Typical reverse recovery charge as a function of IGBT turn on gate resistor

$$Q_{rr} = f(R_{gon})$$

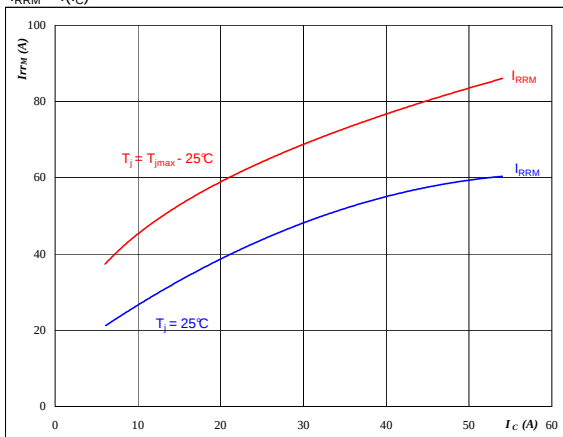


$T_j = 25/125^\circ\text{C}$
 $V_R = 400\text{ V}$
 $I_F = 18\text{ A}$
 $V_{GS} = 15\text{ V}$

Figure 15 PFC FRED

Typical reverse recovery current as a function of collector current

$$I_{RRM} = f(I_C)$$

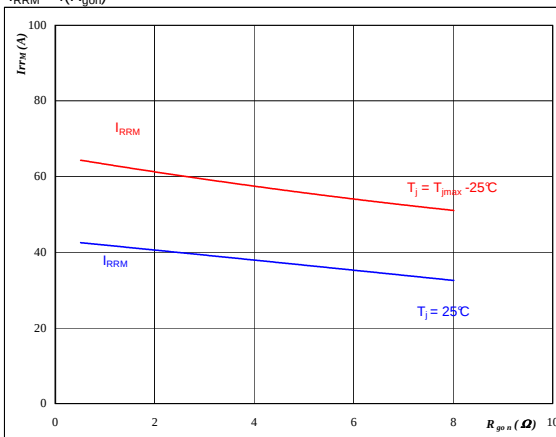


$T_j = 25/125^\circ\text{C}$
 $V_{CE} = 400\text{ V}$
 $V_{GE} = 15\text{ V}$
 $R_{gon} = 4\ \Omega$

Figure 16 PFC FRED

Typical reverse recovery current as a function of IGBT turn on gate resistor

$$I_{RRM} = f(R_{gon})$$

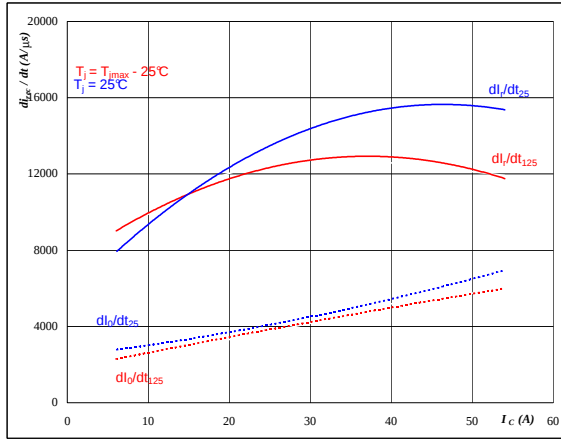


$T_j = 25/125^\circ\text{C}$
 $V_R = 400\text{ V}$
 $I_F = 18\text{ A}$
 $V_{GS} = 15\text{ V}$

PFC

Figure 17 PFC FRED

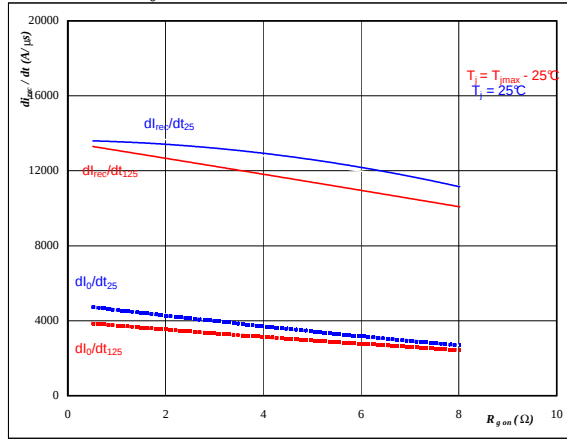
Typical rate of fall of forward
and reverse recovery current as a
function of collector current
 $di_o/dt, di_{rec}/dt = f(I_c)$



$T_j = 25/125$ °C
 $V_{CE} = 400$ V
 $V_{GE} = 15$ V
 $R_{gon} = 4$ Ω

Figure 18 PFC FRED

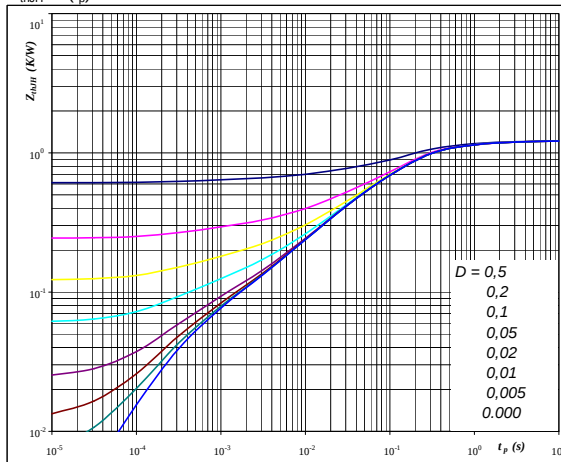
Typical rate of fall of forward
and reverse recovery current as a
function of IGBT turn on gate resistor
 $di_o/dt, di_{rec}/dt = f(R_{gon})$



$T_j = 25/125$ °C
 $V_R = 400$ V
 $I_F = 18$ A
 $V_{GS} = 15$ V

Figure 19 PFC SWITCH

IGBT/MOSFET transient thermal impedance
as a function of pulse width
 $Z_{thJH} = f(t_p)$



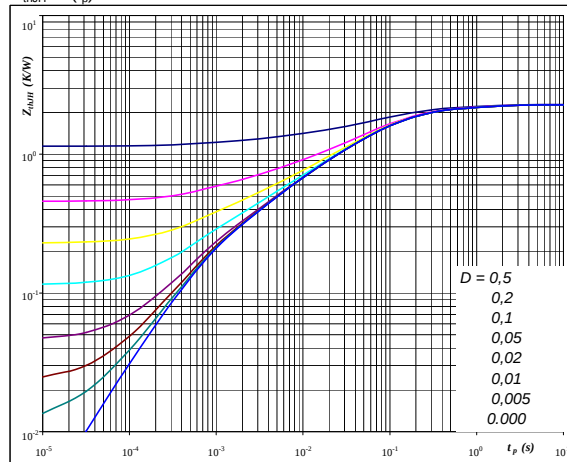
$D = t_p / T$
 $R_{thJH} = 1,22$ K/W

IGBT thermal model values

R (C/W)	Tau (s)
0,047	4,30E+00
0,176	7,15E-01
0,676	1,39E-01
0,214	2,03E-02
0,062	2,91E-03
0,046	3,33E-04

Figure 20 PFC FRED

FRED transient thermal impedance
as a function of pulse width
 $Z_{thJH} = f(t_p)$



$D = t_p / T$
 $R_{thJH} = 2,29$ K/W

FRED thermal model values

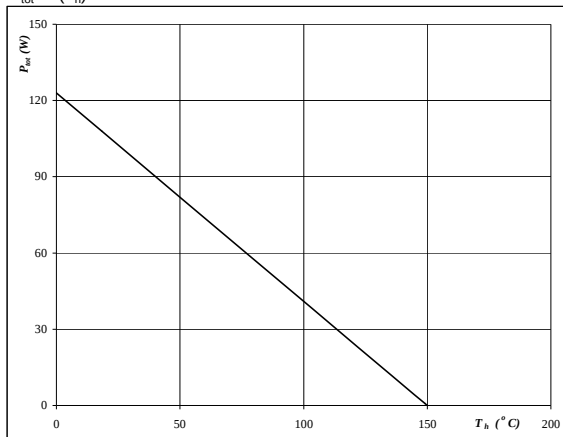
R (C/W)	Tau (s)
0,05	7,26E+00
0,24	8,03E-01
0,85	1,32E-01
0,69	3,21E-02
0,30	4,97E-03
0,17	7,13E-04

PFC

Figure 21 PFC SWITCH

Power dissipation as a
function of heatsink temperature

$$P_{\text{tot}} = f(T_h)$$

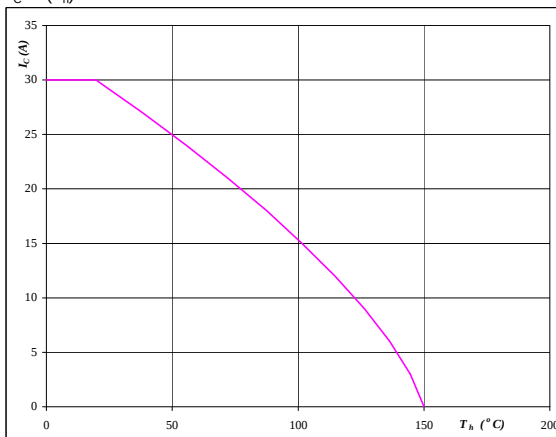


$T_j = 150$ °C

Figure 22 PFC SWITCH

Collector/Drain current as a
function of heatsink temperature

$$I_C = f(T_h)$$

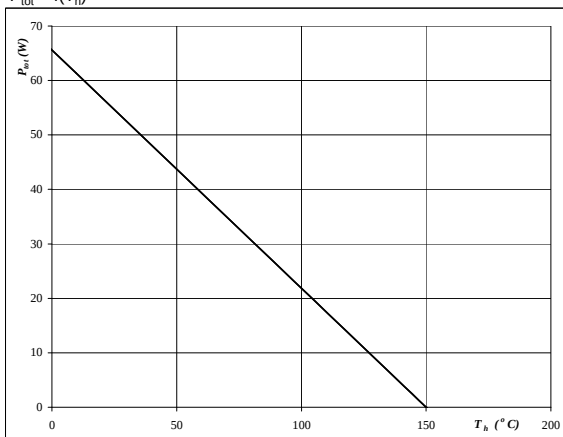


$T_j = 150$ °C
 $V_{GS} = 15$ V

Figure 23 PFC FRED

Power dissipation as a
function of heatsink temperature

$$P_{\text{tot}} = f(T_h)$$

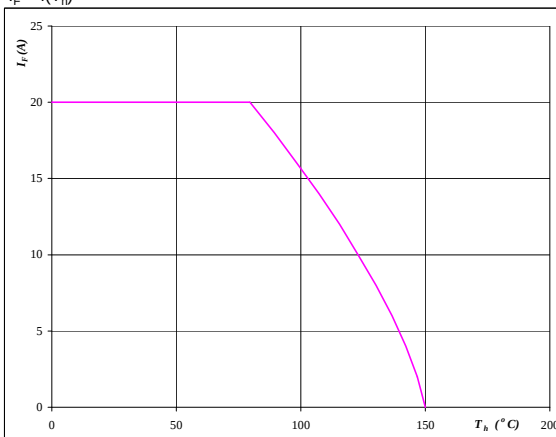


$T_j = 150$ °C

Figure 24 PFC FRED

Forward current as a
function of heatsink temperature

$$I_F = f(T_h)$$

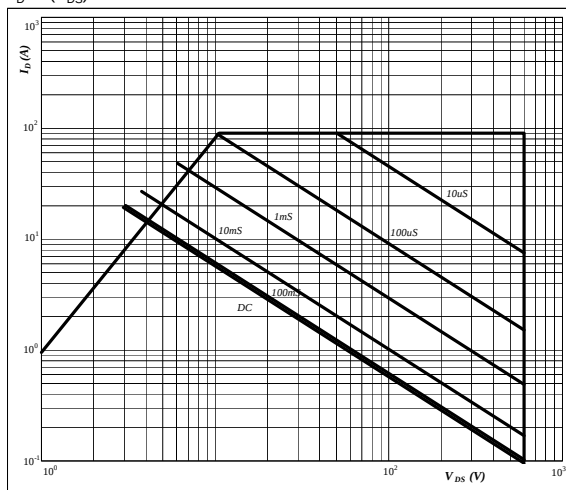


$T_j = 150$ °C

PFC

Figure 25 PFC SWITCH

Safe operating area as a function
 of drain-source voltage
 $I_D = f(V_{DS})$

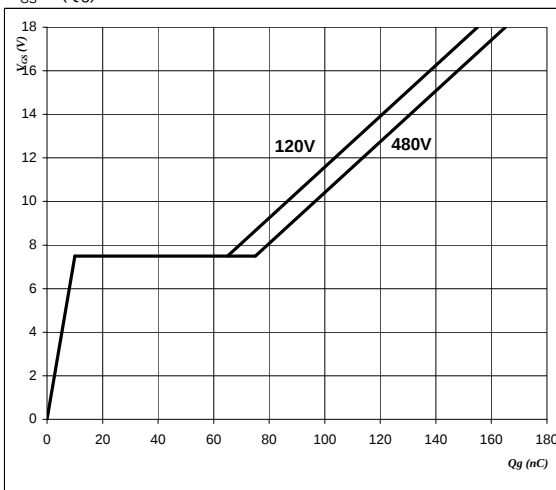


D = single pulse
 $T_h = 80^\circ\text{C}$
 $V_{GS} = 15\text{ V}$
 $T_j = T_{jmax}^\circ\text{C}$

Figure 26 PFC SWITCH

Gate voltage vs Gate charge

$V_{GS} = f(Q_g)$



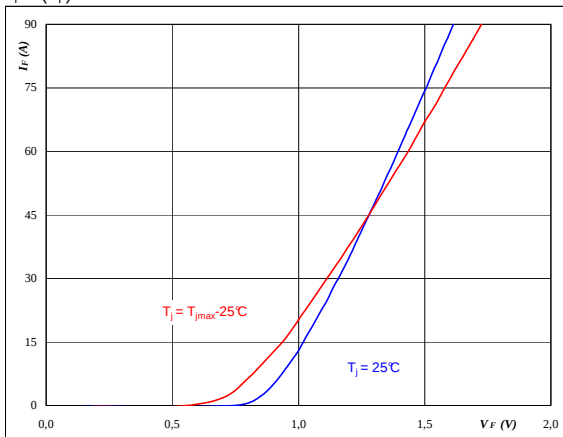
$I_D = 30\text{ A}$

Input Rectifier Bridge

Figure 1 Rectifier diode

Typical diode forward current as a function of forward voltage

$$I_F = f(V_F)$$

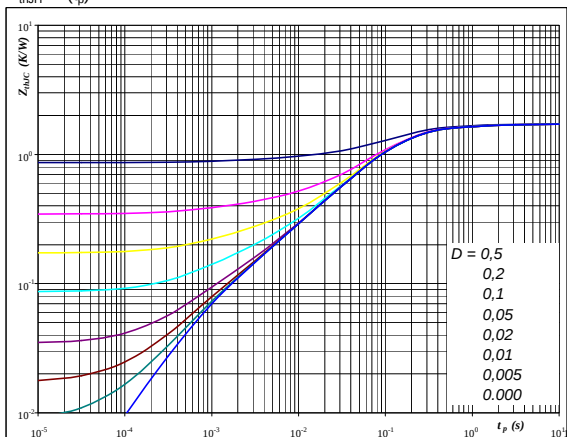


$t_p = 250 \mu s$

Figure 2 Rectifier diode

Diode transient thermal impedance as a function of pulse width

$$Z_{thJH} = f(t_p)$$

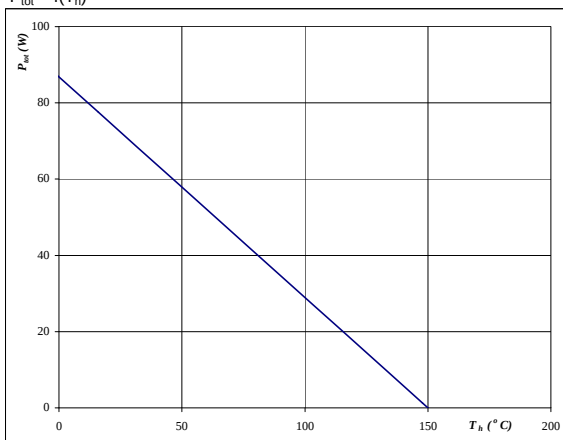


$D = t_p / T$
 $R_{thJH} = 1,728 \text{ K/W}$

Figure 3 Rectifier diode

Power dissipation as a function of heatsink temperature

$$P_{tot} = f(T_h)$$

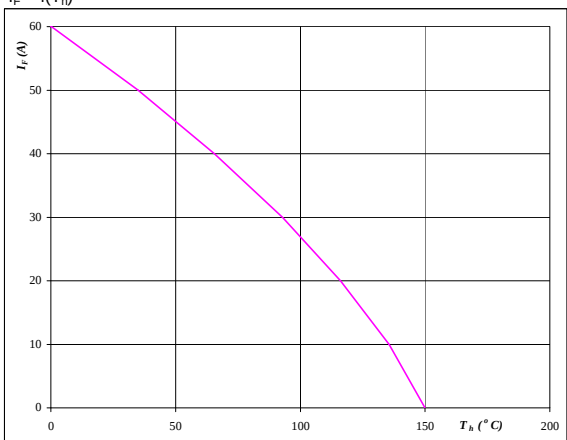


$T_j = 150 \text{ } ^\circ\text{C}$

Figure 4 Rectifier diode

Forward current as a function of heatsink temperature

$$I_F = f(T_h)$$



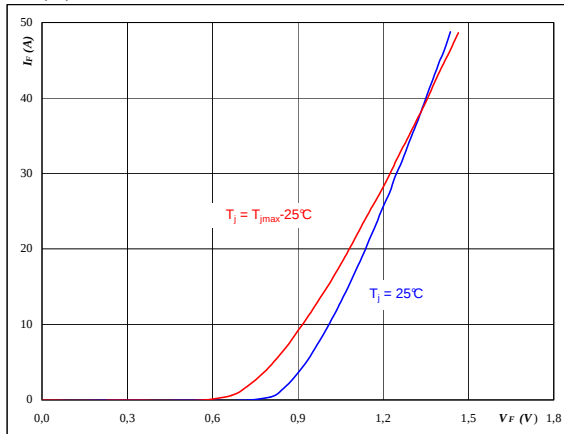
$T_j = 150 \text{ } ^\circ\text{C}$

Thyristor

Figure 1 Thyristor

Typical thyristor forward current as a function of forward voltage

$$I_F = f(V_F)$$

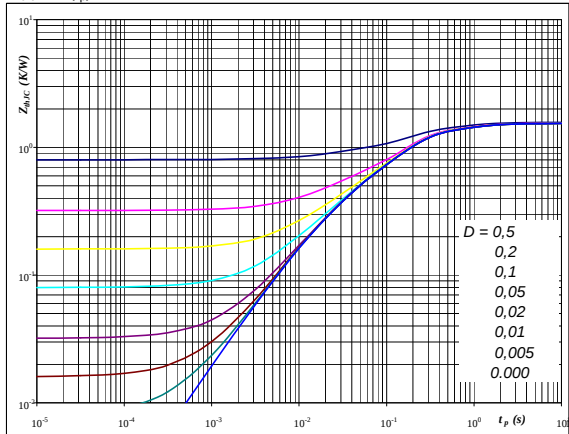


$t_p = 250 \mu s$

Figure 2 Thyristor

Thyristor transient thermal impedance as a function of pulse width

$$Z_{thJH} = f(t_p)$$

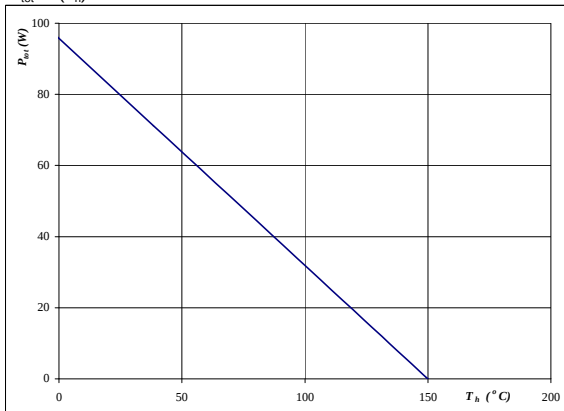


$D = t_p / T$
 $R_{thJH} = 1,57 \text{ K/W}$

Figure 3 Thyristor

Power dissipation as a function of heatsink temperature

$$P_{tot} = f(T_h)$$

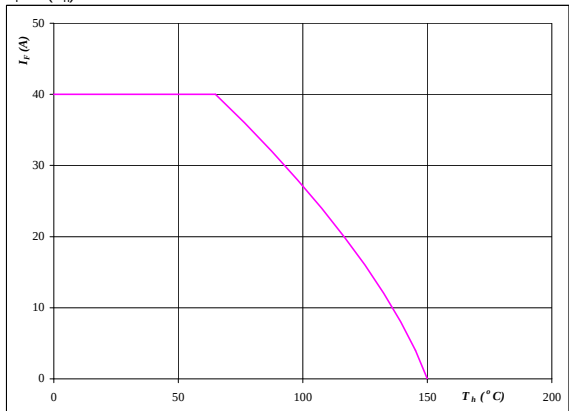


$T_j = 150 \text{ } ^\circ\text{C}$

Figure 4 Thyristor

Forward current as a function of heatsink temperature

$$I_F = f(T_h)$$



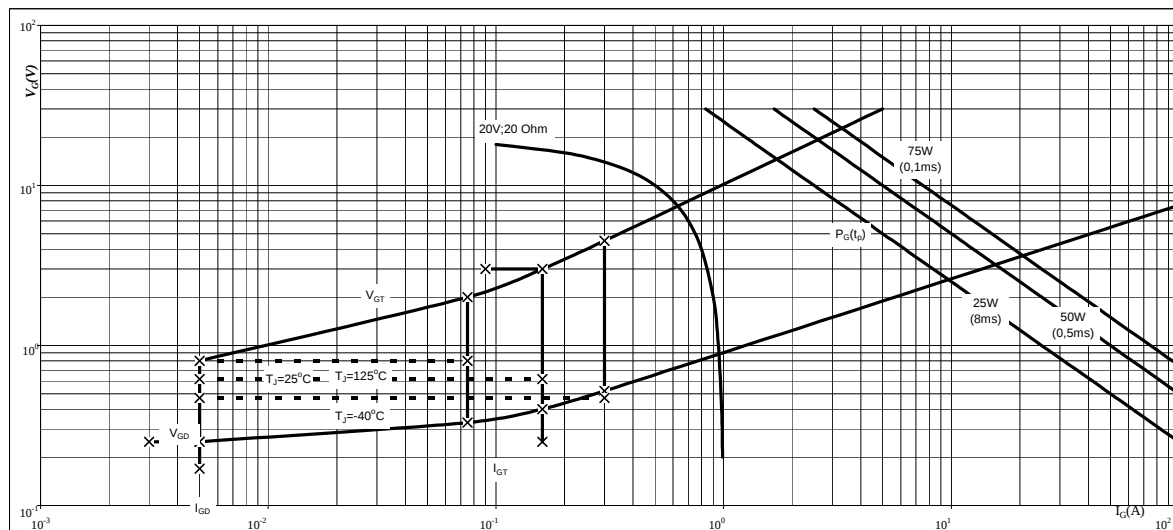
$T_j = 150 \text{ } ^\circ\text{C}$

Thyristor

Figure 5

Thyristor

Gate trigger characteristics

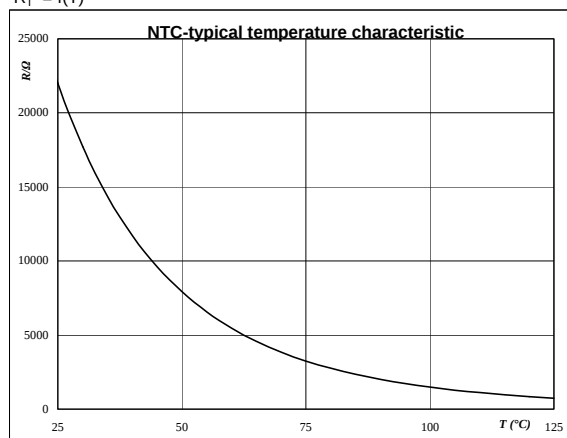


Thermistor

Figure 1

Thermistor

Typical NTC characteristic
 as a function of temperature
 $R_T = f(T)$



Switching Definitions PFC

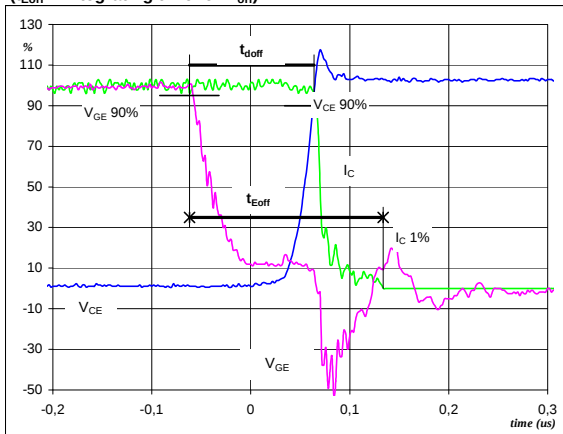
General conditions

T_j	=	125 °C
R_{gon}	=	2 Ω
R_{goff}	=	2 Ω

Figure 1 PFC SWITCH

Turn-off Switching Waveforms & definition of t_{doff} , t_{Eoff}

(t_{Eoff} = integrating time for E_{off})

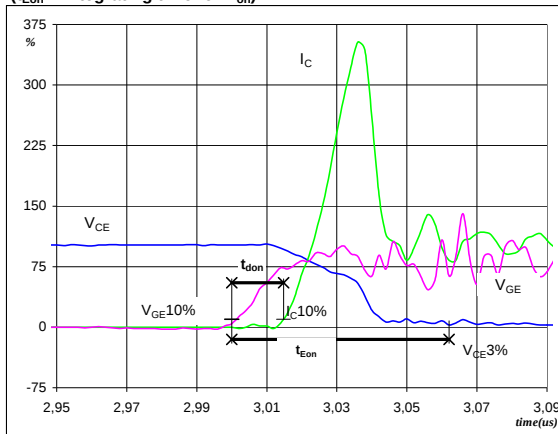


$V_{GE}(0\%) =$	0	V
$V_{GE}(100\%) =$	15	V
$V_C(100\%) =$	400	V
$I_C(100\%) =$	30	A
$t_{doff} =$	0,12	μs
$t_{Eoff} =$	0,20	μs

Figure 2 PFC SWITCH

Turn-on Switching Waveforms & definition of t_{don} , t_{Eon}

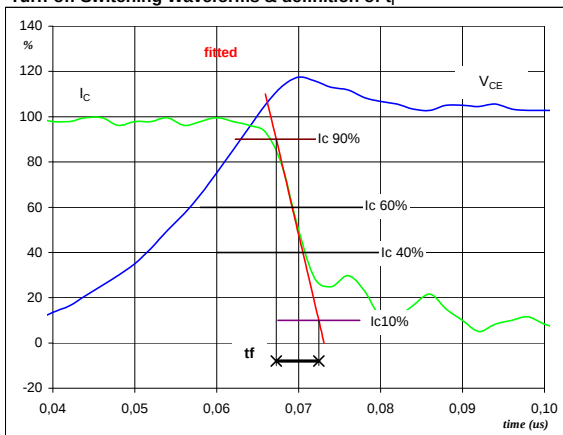
(t_{Eon} = integrating time for E_{on})



$V_{GE}(0\%) =$	0	V
$V_{GE}(100\%) =$	15	V
$V_C(100\%) =$	400	V
$I_C(100\%) =$	30	A
$t_{don} =$	0,02	μs
$t_{Eon} =$	0,06	μs

Figure 3 PFC SWITCH

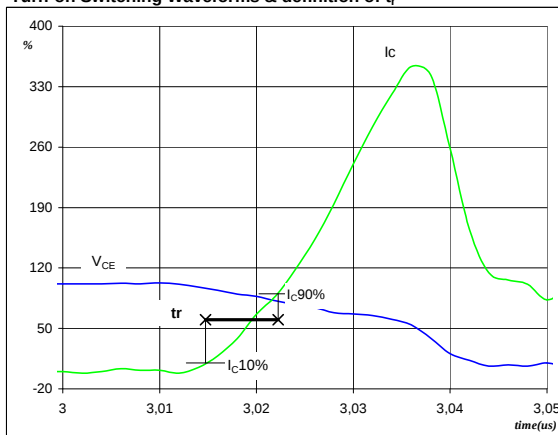
Turn-off Switching Waveforms & definition of t_f



$V_C(100\%) =$	400	V
$I_C(100\%) =$	30	A
$t_f =$	0,007	μs

Figure 4 PFC SWITCH

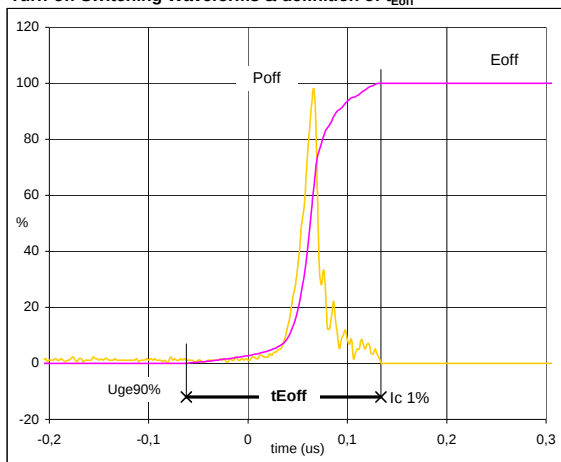
Turn-on Switching Waveforms & definition of t_r



$V_C(100\%) =$	400	V
$I_C(100\%) =$	30	A
$t_r =$	0,007	μs

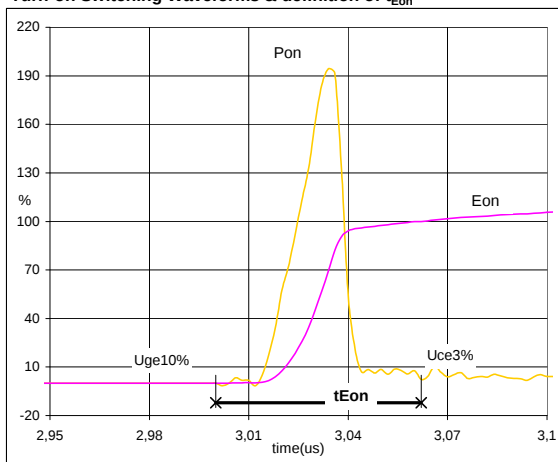
Switching Definitions PFC

Figure 5 PFC SWITCH
Turn-off Switching Waveforms & definition of t_{Eoff}



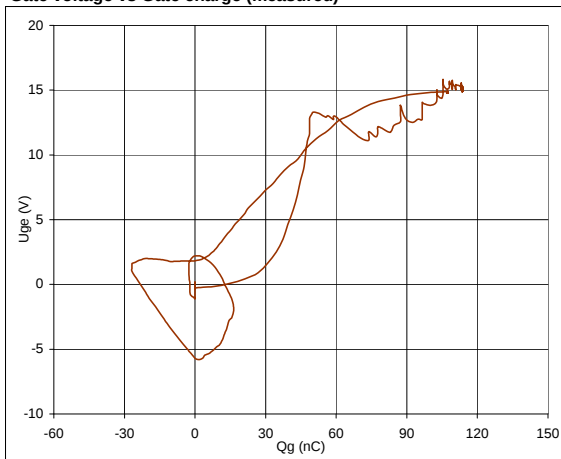
$P_{off}(100\%) = 12.06 \text{ kW}$
 $E_{off}(100\%) = 0.31 \text{ mJ}$
 $t_{Eoff} = 0.20 \text{ μs}$

Figure 6 PFC SWITCH
Turn-on Switching Waveforms & definition of t_{Eon}



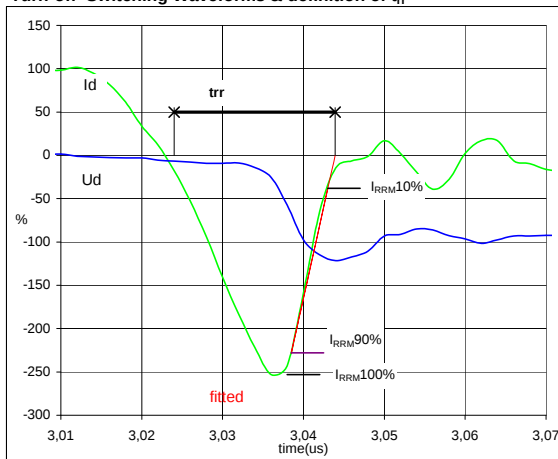
$P_{on}(100\%) = 12.06 \text{ kW}$
 $E_{on}(100\%) = 0.40 \text{ mJ}$
 $t_{Eon} = 0.062 \text{ μs}$

Figure 7 PFC SWITCH
Gate voltage vs Gate charge (measured)



$V_{GEoff} = 0 \text{ V}$
 $V_{GEon} = 15 \text{ V}$
 $V_C(100\%) = 400 \text{ V}$
 $I_C(100\%) = 30 \text{ A}$
 $Q_g = 113.90 \text{ nC}$

Figure 8 PFC FRED
Turn-off Switching Waveforms & definition of t_{rr}

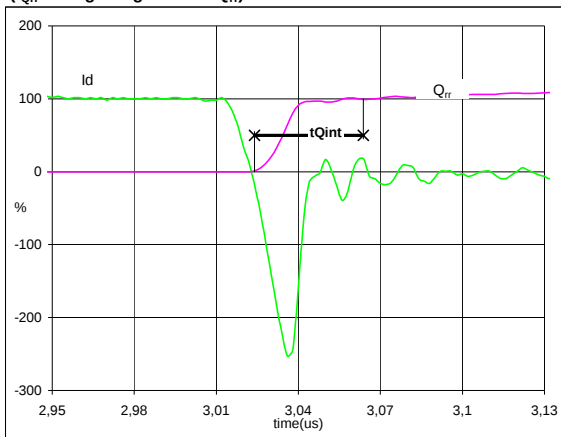


$V_d(100\%) = 400 \text{ V}$
 $I_d(100\%) = 30 \text{ A}$
 $I_{RRM}(100\%) = -75 \text{ A}$
 $t_{rr} = 0.02 \text{ μs}$

Switching Definitions PFC

Figure 9 PFC FRED

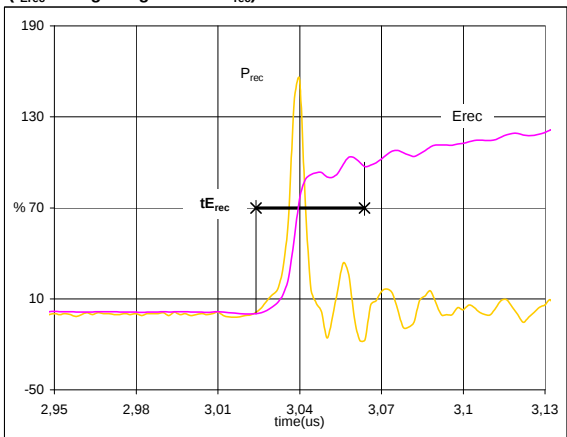
Turn-on Switching Waveforms & definition of t_{Qrr}
 (t_{Qrr} = integrating time for Q_{rr})



I_d (100%) = 30 A
 Q_{rr} (100%) = 0,89 μC
 t_{Qint} = 0,04 μs

Figure 10 PFC FRED

Turn-on Switching Waveforms & definition of t_{Erec}
 (t_{Erec} = integrating time for E_{rec})



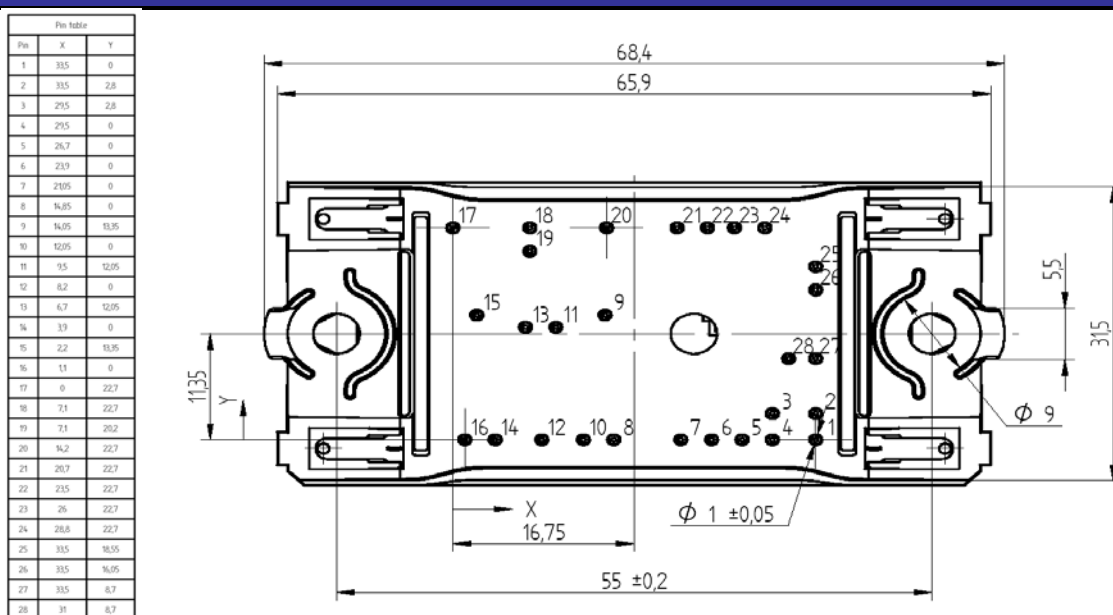
P_{rec} (100%) = 12,06 kW
 E_{rec} (100%) = 0,19 mJ
 t_{Erec} = 0,04 μs

Ordering Code and Marking - Outline - Pinout

Ordering Code & Marking

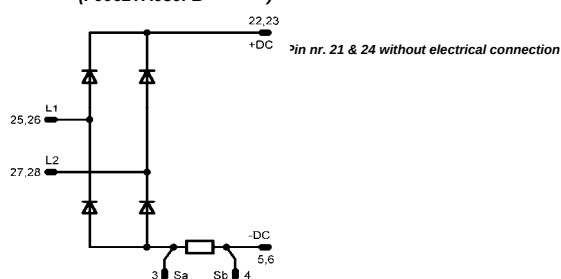
Version	Ordering Code	in DataMatrix as	in packaging barcode as
without SCR, current sense in collector	10-FZ062TA030FB-P983D18	P983D18	P983D18
with SCR, current sense in collector	10-FZ062TA030FB01-P983D28	P983D28	P983D28
without SCR, current sense in emitter	10-FZ062TA030FB02-P983D38	P983D38	P983D38
with SCR, current sense in emitter	10-FZ062TA030FB03-P983D48	P983D48	P983D48
without SCR, current sense in collector	10-F0062TA030FB-P983D19	P983D19	P983D19
with SCR, current sense in emitter	10-F0062TA030FB03-P983D49	P983D49	P983D49

Outline

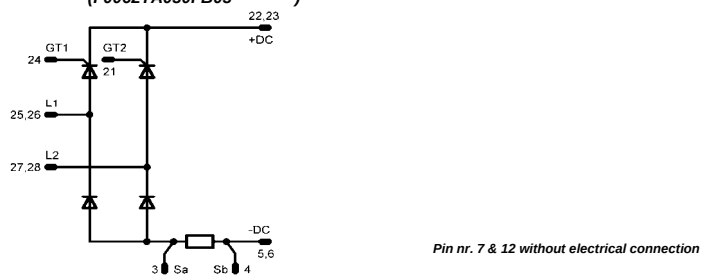


Pinout

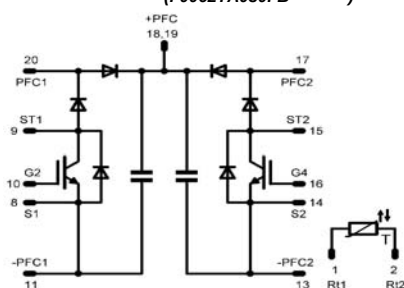
Rectifier(FZ062TA030(FB/FB02)) (F0062TA030FB)



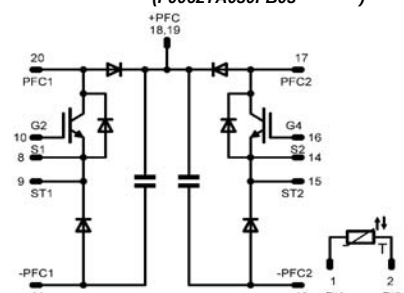
Rectifier(FZ062TA030(FB01/FB03)) (F0062TA030FB03)



Boost stage(FZ062TA030(FB/FB01)) (F0062TA030FB)



Boost stage(FZ062TA030(FB02/FB03)) (F0062TA030FB03)



PRODUCT STATUS DEFINITIONS

Datasheet Status	Product Status	Definition
Target	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice. The data contained is exclusively intended for technically trained staff.
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