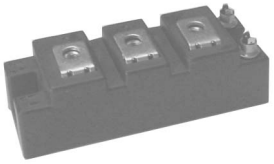
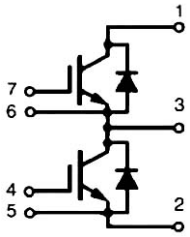
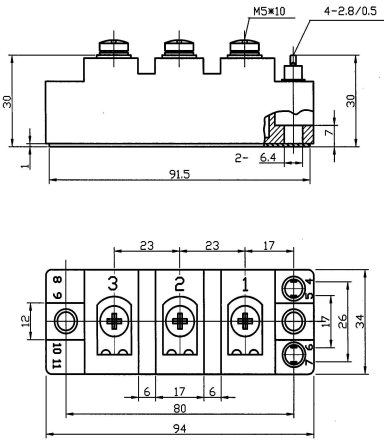
SII100N12

NPT IGBT Modules





Dimensions in mm (1mm = 0.0394")



Absolute Maximum Ratings T_C = 25°C, unless otherwise specified

Symbol	Conditions	Values	Units
V_{CES}		1200	V
I_C	T_C= 25(80)°C	145(100)	A
I_{CRM}	T_C= 25(80)°C, t_P =1ms	290(200)	A
V_{GES}		±20	V
P_{tot}		700	W
T_{Vj},(T_{stg})	$T_{OPERATION} \leq T_{stg}$	−40...+125(150)	°C
V_{isol}	AC, 1min	2500	V
R_{thJC}		≤ 0.18	K/W
R_{thJCD}		≤ 0.36	

Sirectifier®

SII100N12

NPT IGBT Modules

Electeical Characteristics $T_C = 25^oC$, unless otherwise specified

Symbol	Conditions	min.	typ.	max.	Units
Static Characteristics					
$V_{GE(th)}$	$V_{GE} = V_{CE}$, I_C =4mA	4.5	5.5	6.5	V
I_{CES}	V_{GE} = 0; V_{CE} = 1200V; T_j = 25(125)^oC		1.5(6)	2	mA
I_{GES}	V_{GE} = 20V, V_{CE} = 0			400	nA
$V_{CE(sat)}$	I_C =100A; V_{GE} = 15V; T_j = 25(125)^oC; chip level		2.5(3.1)	3(3.7)	V
AC Characteristics					
C_{ies}	under following conditions		6.5		nF
C_{oes}	V_{GE} = 0, V_{CE} = 25V, f = 1MHz		1		
C_{res}			0.5		
g_{fs}	V_{CE}=20V, I_C=100A	54			S
Switching Characteristics					
$t_{d(on)}$	V_{CC} = 600V, I_C = 100A		130	260	ns
t_r	R_{Gon} = R_{Goff} =6.8Ω, T_j = 125^oC		80	160	
$t_{d(off)}$	V_{GE} = ± 15V		400	600	
t_f			70	100	
FWD under following conditions:					
V_F	I_F = 100A, V_{GE} = 0V, T_j = 25(125)^oC		2.3(1.8)	2.8	V
t_{rr}	I_F=100A, V_R=–600V,V_{GE}=0V,di/dt=–1000A/us,T_j = 125^oC		0.3		us
Q_{rr}	I_F = 100A, V_{GE} = 0V, V_R=– 600V di/dt=–1000A/us, T_j = 25(125)^oC		4(14)		uC
Mechanical Data					
M_s	to heatsink M6	3		5	Nm
M_t	to terminals M5	2.5		5	Nm
w				160	g

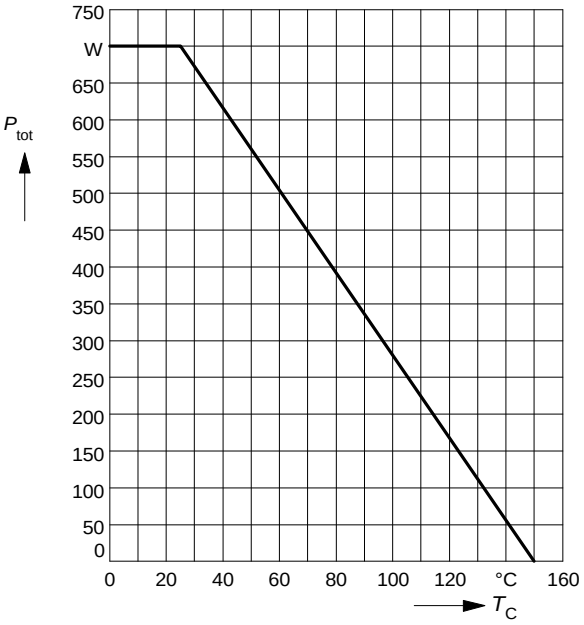
SII100N12

NPT IGBT Modules

Power dissipation

$P_{tot} = f(T_C)$

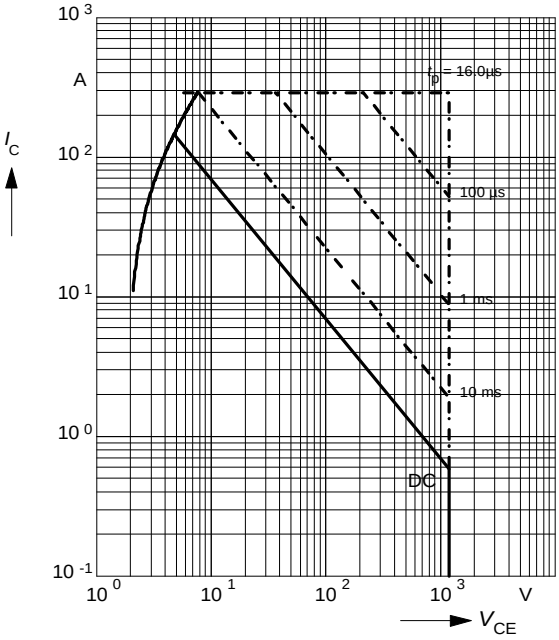
parameter: $T_j \leq 150$ °C



Safe operating area

$I_C = f(V_{CE})$

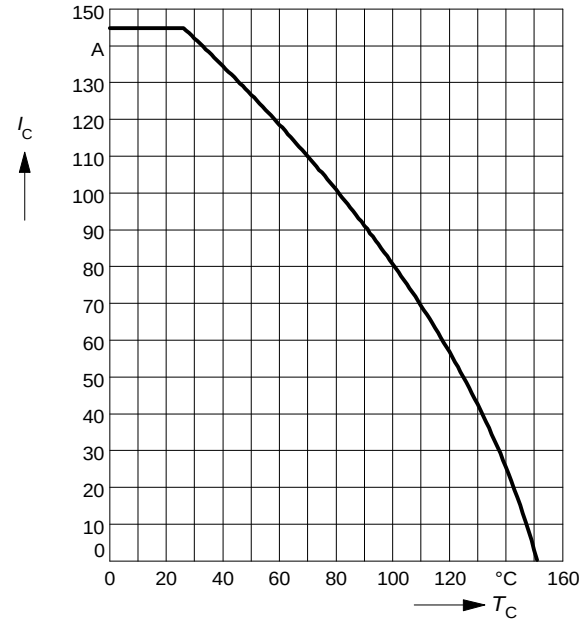
parameter: $D = 0$, $T_C = 25$°C , $T_j \leq 150$ °C



Collector current

$I_C = f(T_C)$

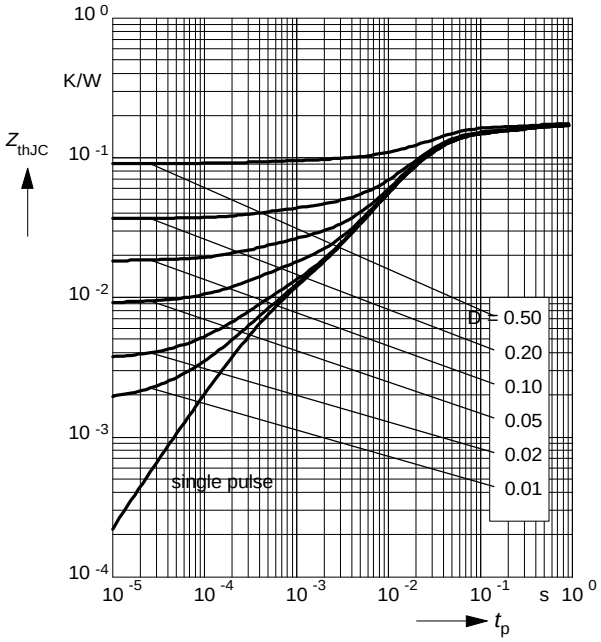
parameter: $V_{GE} \geq 15$ V , $T_j \leq 150$ °C



Transient thermal impedance IGBT

$Z_{th\,JC} = f(t_p)$

parameter: $D = t_p / T$



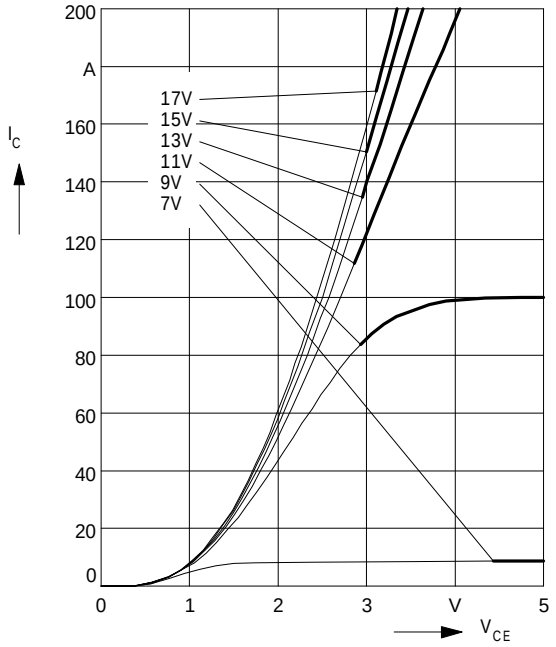
SII100N12

NPT IGBT Modules

Typ. output characteristics

$I_C = f(V_{CE})$

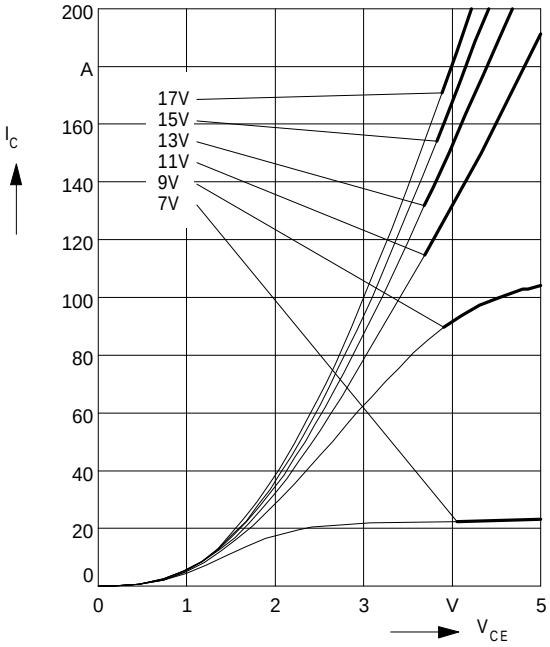
parameter: $t_p = 80\ \mu s$, $T_j = 25\ °C$



Typ. output characteristics

$I_C = f(V_{CE})$

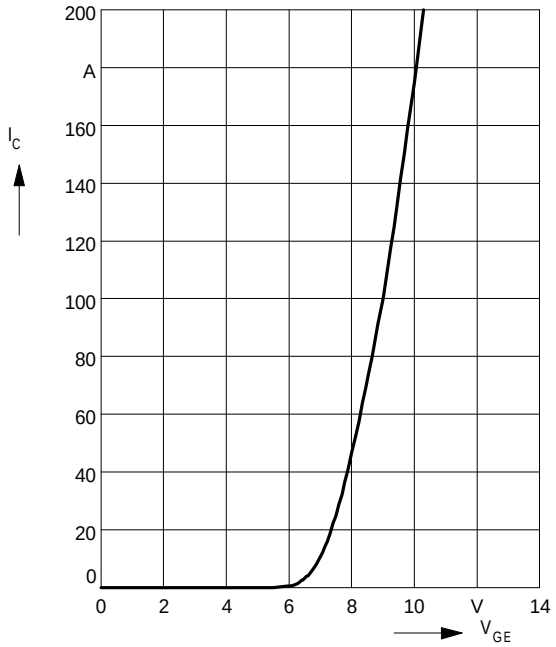
parameter: $t_p = 80\ \mu s$, $T_j = 125\ °C$



Typ. transfer characteristics

$I_C = f(V_{GE})$

parameter: $t_p = 80\ \mu s$, $V_{CE} = 20\ V$



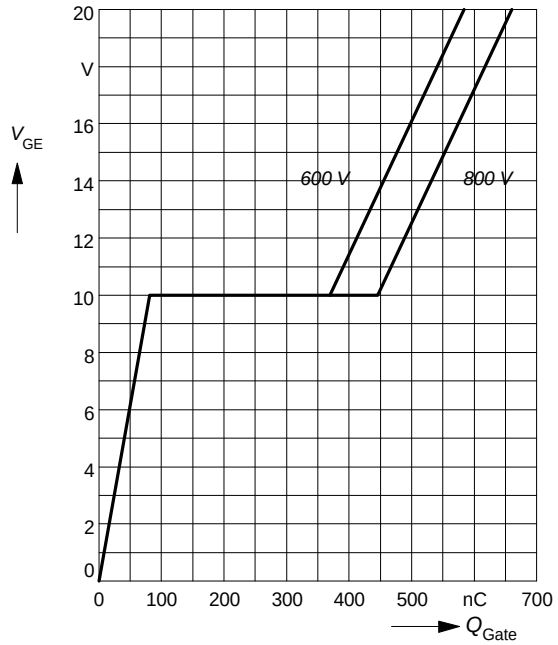
SII100N12

NPT IGBT Modules

Typ. gate charge

$V_{GE} = f(Q_{Gate})$

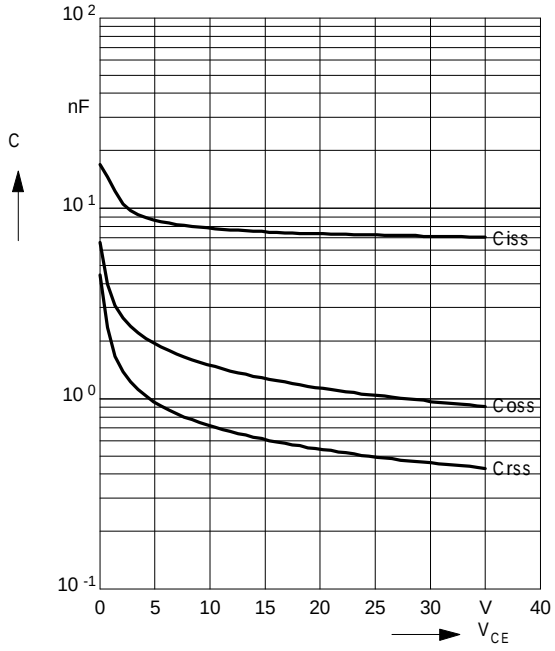
parameter: $I_{C\ puls}$ = 100 A



Typ. capacitances

$C = f(V_{CE})$

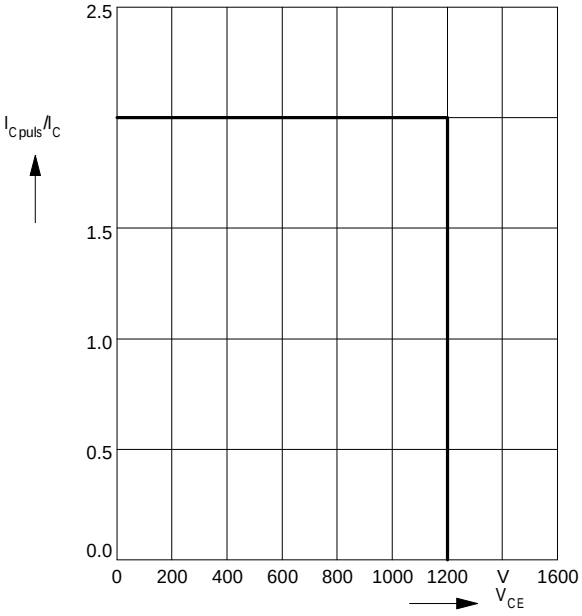
parameter: V_{GE} = 0 V, f = 1 MHz



Reverse biased safe operating area

$I_{C puls} = f(V_{CE})$, T_j = 150°C

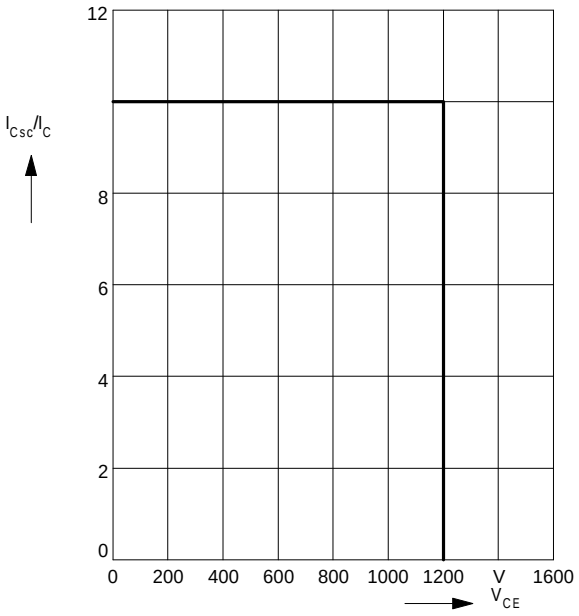
parameter: V_{GE} = 15 V



Short circuit safe operating area

$I_{Csc} = f(V_{CE})$, T_j = 150°C

parameter: V_{GE} = ± 15 V, t_{SC} ≤ 10 µs, L < 50 nH



Sirectifier®

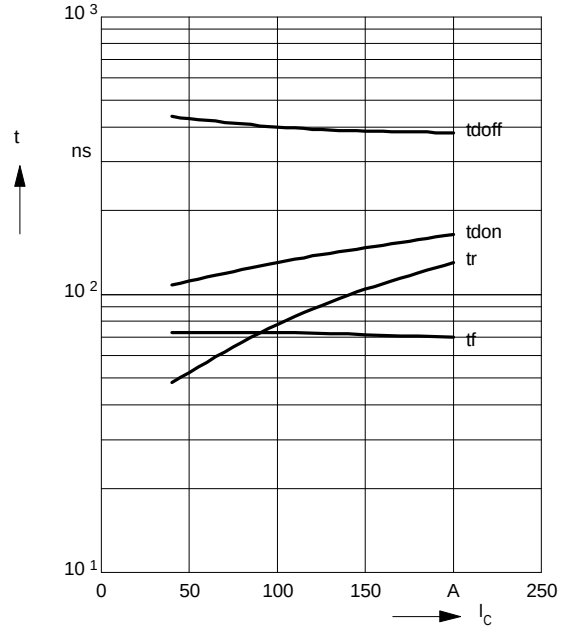
SII100N12

NPT IGBT Modules

Typ. switching time

$I = f(I_C)$, inductive load , $T_j = 125°C$

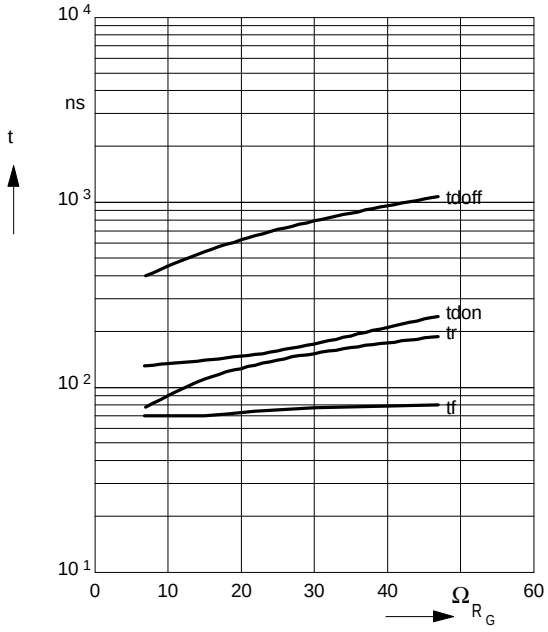
par.: $V_{CE} = 600$ V, $V_{GE} = \pm 15$ V, $R_G = 6.8\ \Omega$



Typ. switching time

$t = f(R_G)$, inductive load , $T_j = 125°C$

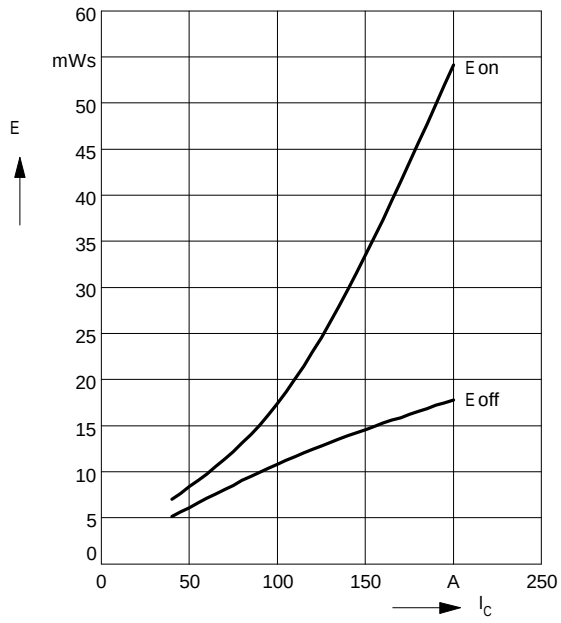
par.: $V_{CE} = 600$ V, $V_{GE} = \pm 15$ V, $I_C = 100$ A



Typ. switching losses

$E = f(I_C)$, inductive load , $T_j = 125°C$

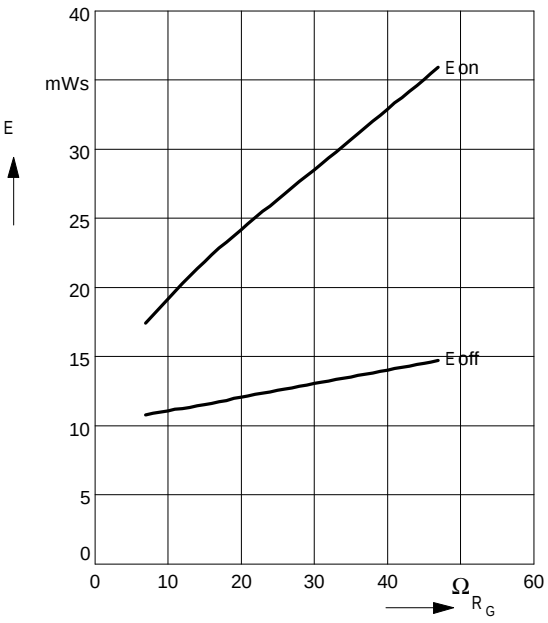
par.: $V_{CE} = 600$ V, $V_{GE} = \pm 15$ V, $R_G = 6.8\ \Omega$



Typ. switching losses

$E = f(R_G)$, inductive load , $T_j = 125°C$

par.: $V_{CE} = 600$V, $V_{GE} = \pm 15$ V, $I_C = 100$ A

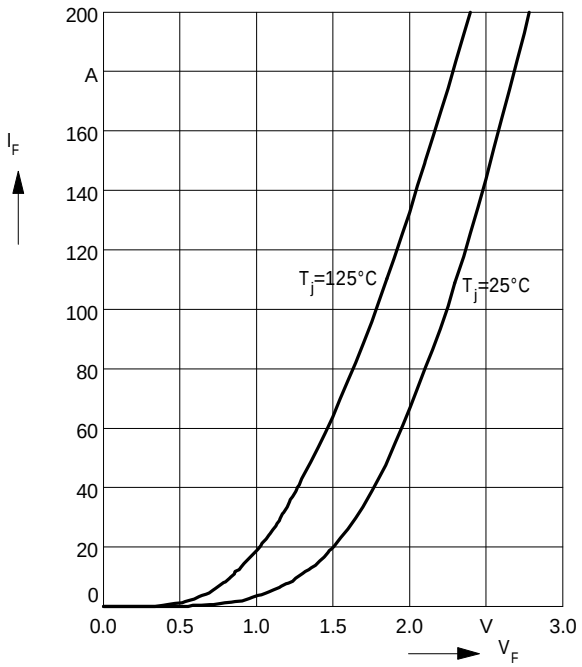


Sirectifier®

SII100N12

NPT IGBT Modules

Forward characteristics of fast recovery reverse diode $I_F = f(V_F)$
parameter: T_j



Transient thermal impedance Diode
$Z_{th\,JC} = f(t_p)$
parameter: $D = t_p / T$

