

SKM 400GB124D



SEMITRANS™ 3

Low Loss IGBT Modules

SKM 400GB124D

SKM 400GAL124D

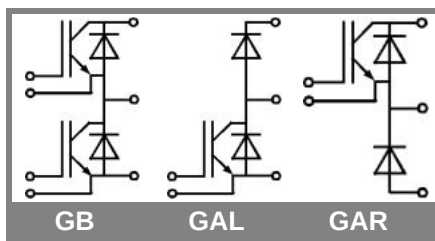
SKM 400GAR124D

Features

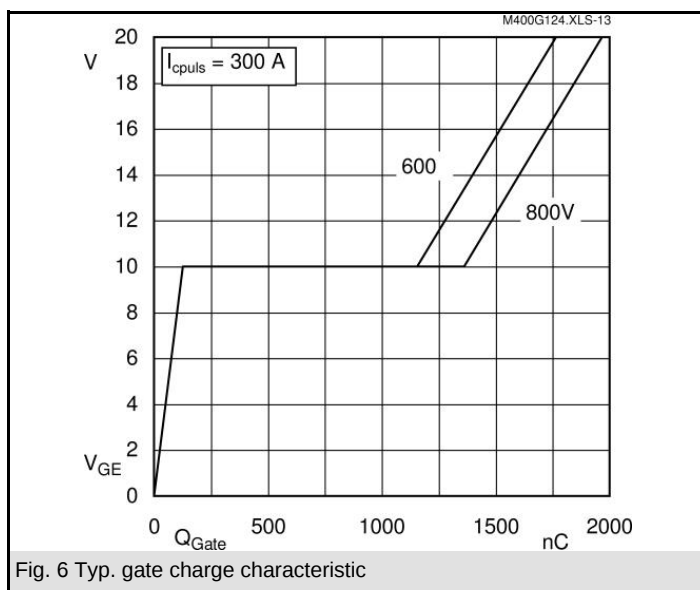
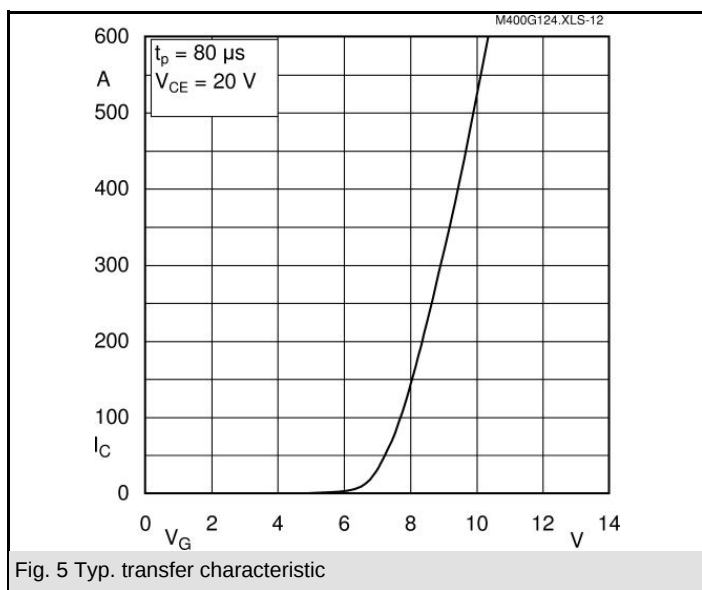
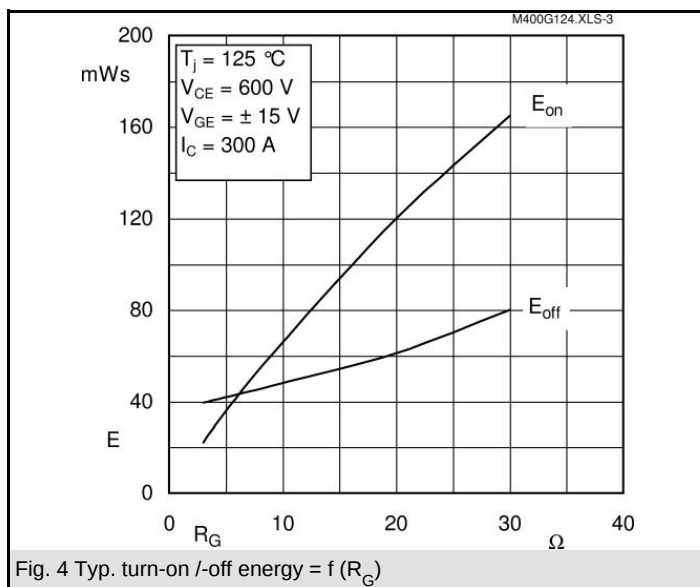
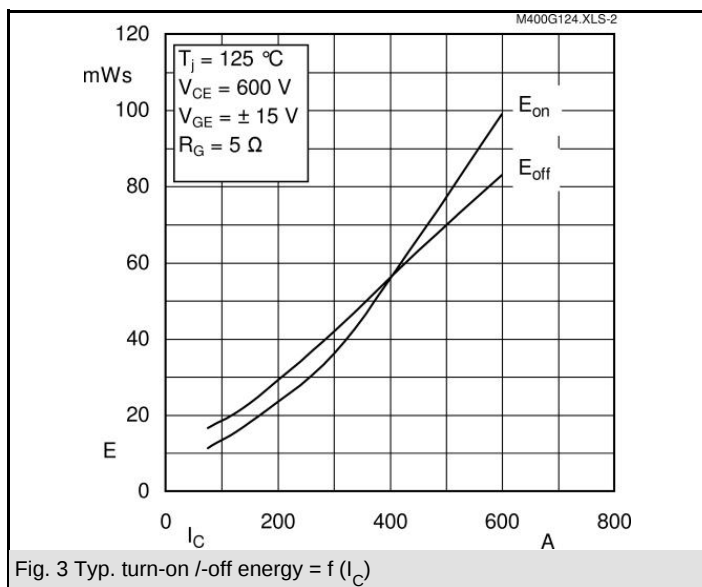
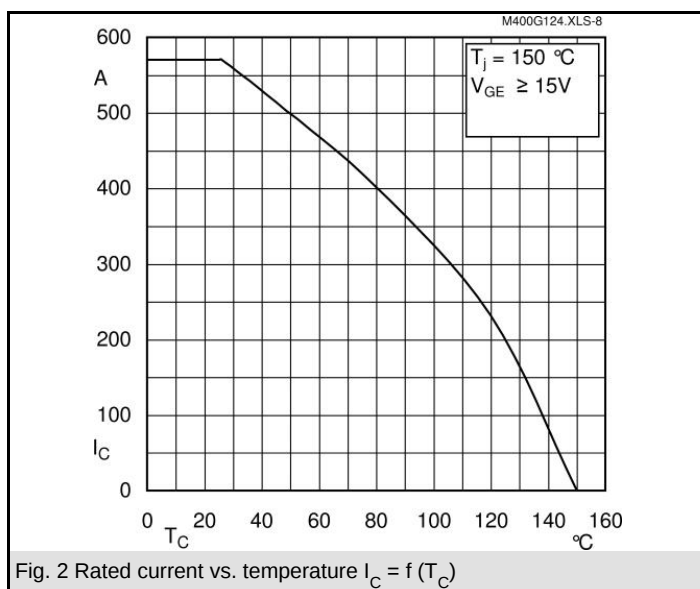
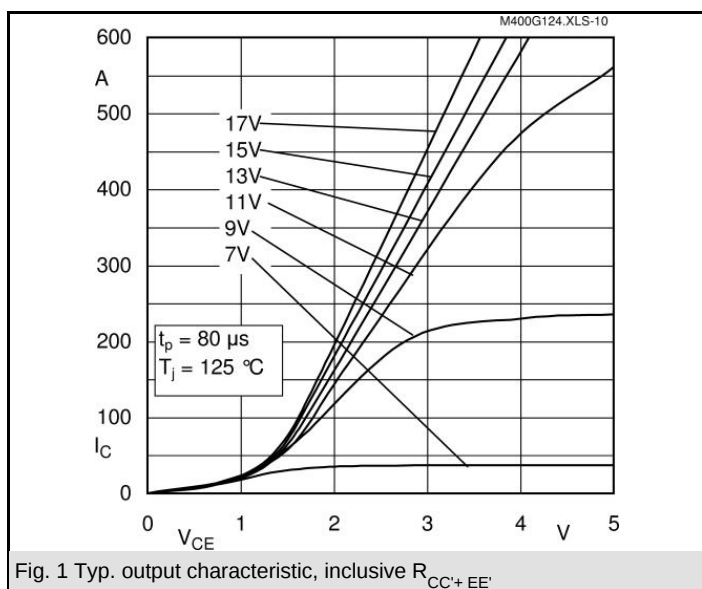
- MOS input (voltage controlled)
- N channel, homogeneous Si-structure (NPT- Non punch-through IGBT)
- Low inductance case
- Very low tail current with low temperature dependence
- High short circuit capability, self limiting to $6 \times I_{C\text{NOM}}$
- Latch-up free
- Fast & soft inverse CAL Diodes
- Isolated copper baseplate using DCB Direct Copper Bonding Technology without hard mould
- Large clearance (12 mm) and creepage distance (20 mm)

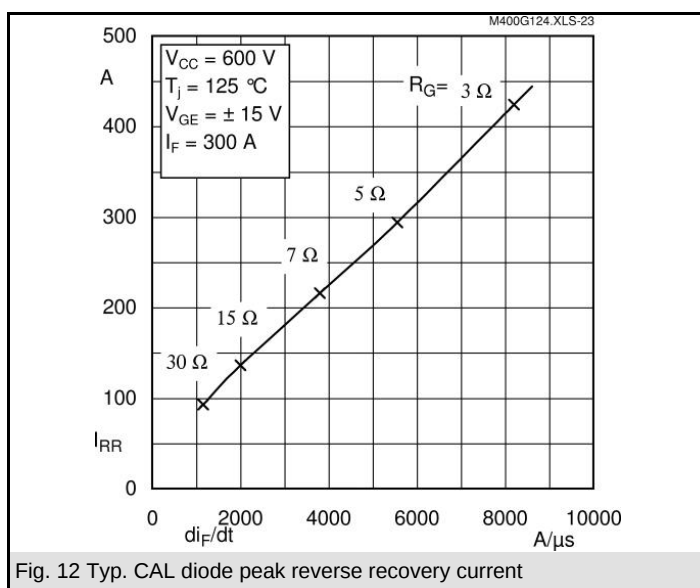
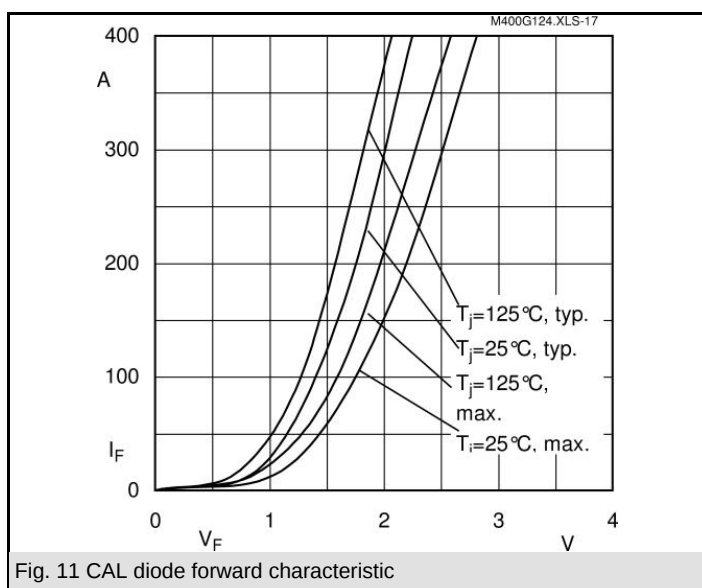
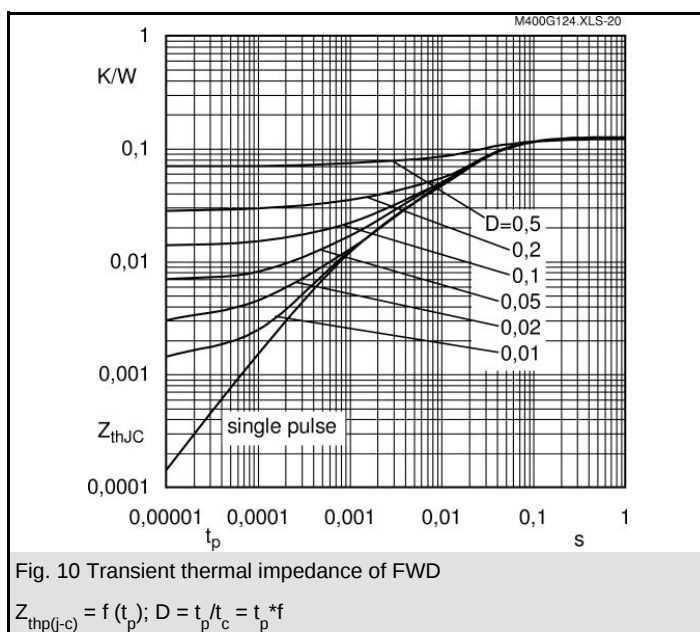
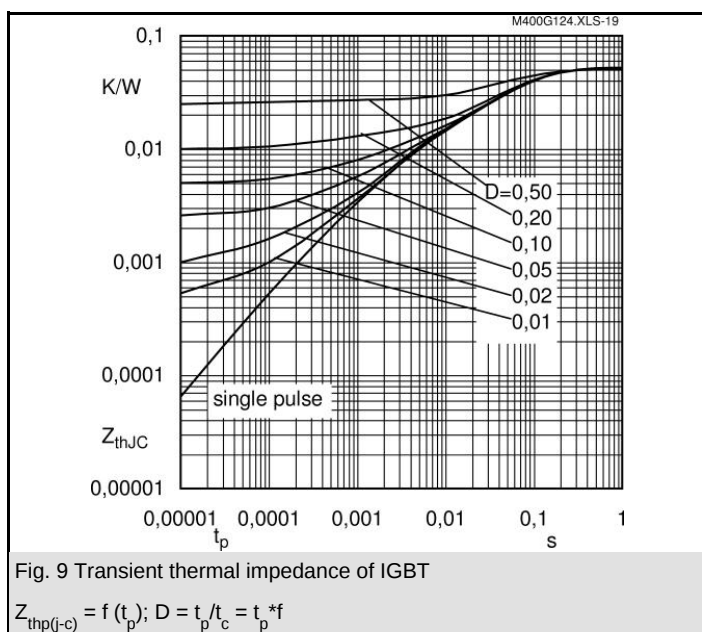
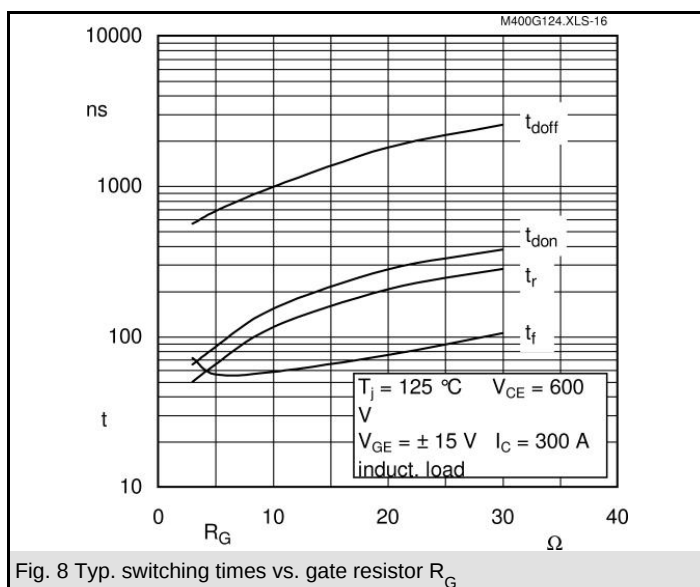
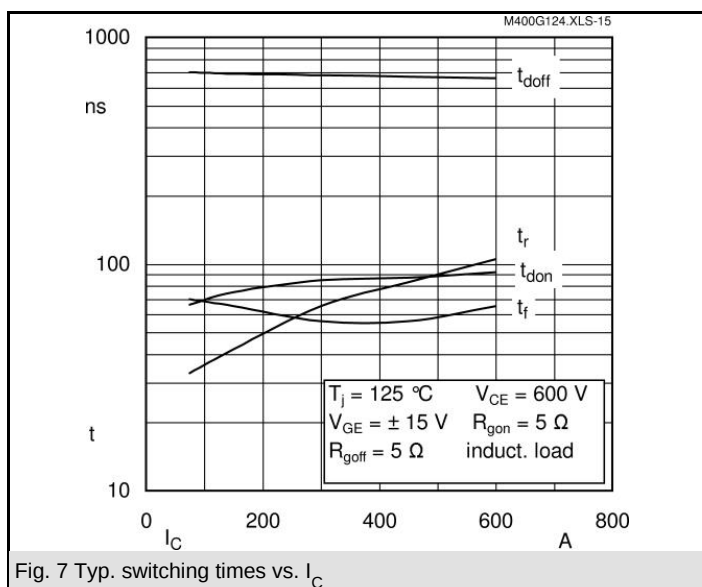
Typical Applications

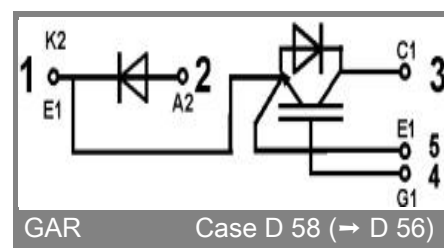
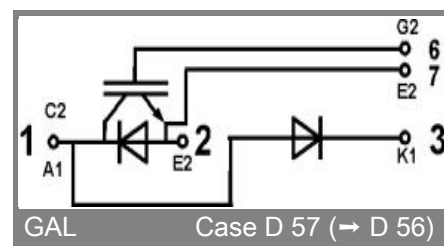
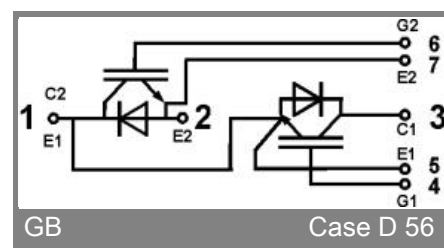
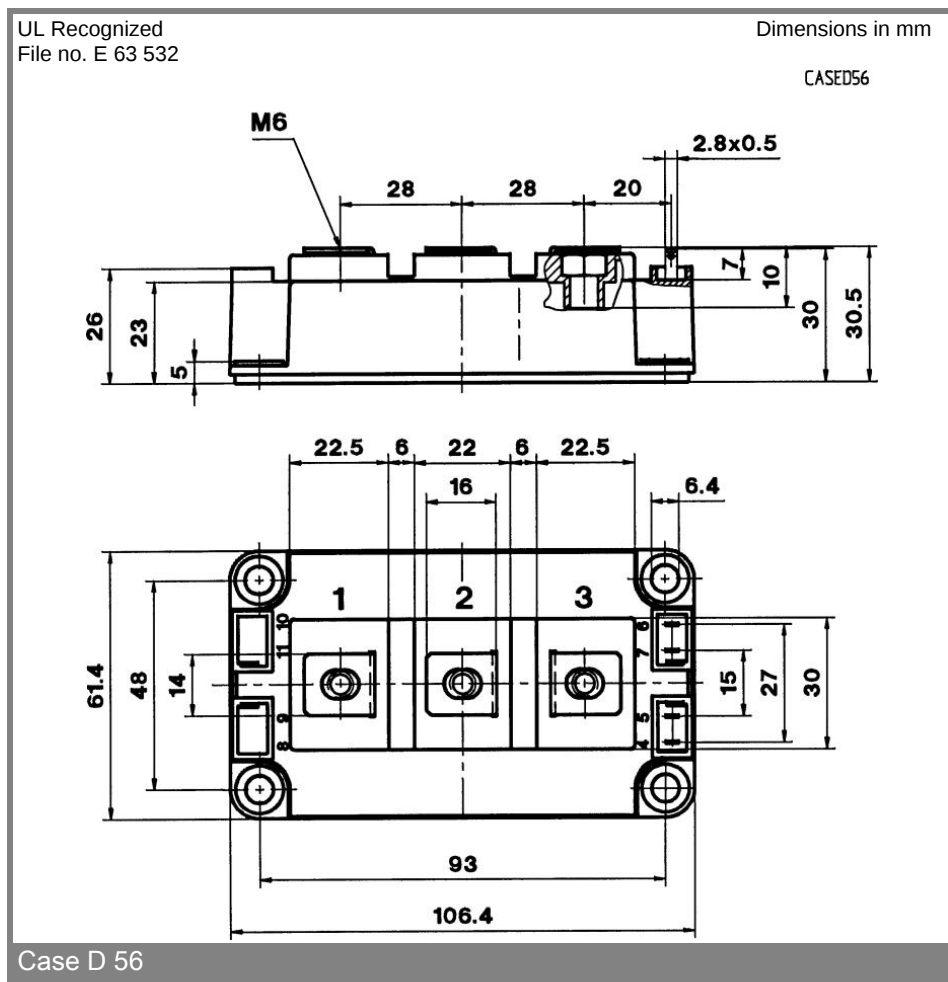
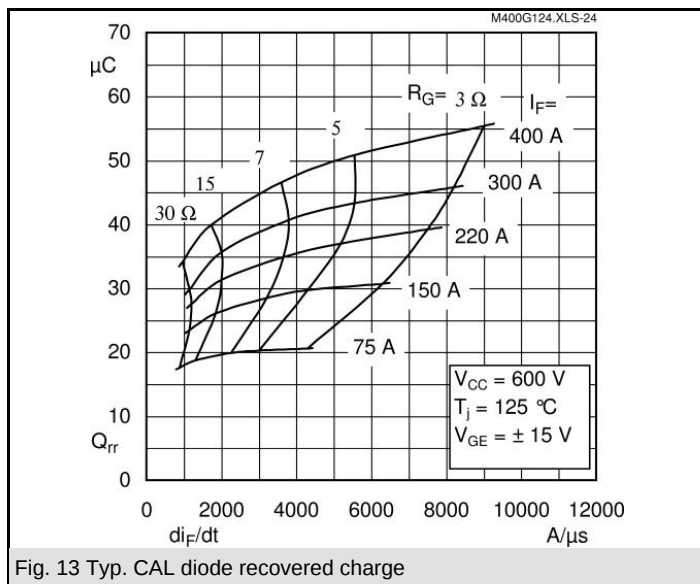
- Switching (not for lineal use)
- Inverter drives
- UPS



Absolute Maximum Ratings		T _c = 25 °C, unless otherwise specified			
Symbol	Conditions	Values			Units
IGBT					
V _{CES}	T _c = 25 (80) °C t _p = 1 ms	1200			V
I _C		570 (400)			A
I _{CRM}		600			A
V _{GES}		± 20			V
T _{vj} , (T _{stg})	T _{OPERATION} ≤ T _{stg}	- 40 ... + 150 (125)			°C
V _{isol}	AC, 1 min.	2500			V
Inverse diode					
I _F	T _c = 25 (80) °C	390 (260)			A
I _{FRM}	t _p = 1 ms	600			A
I _{FSM}	t _p = 10 ms; sin.; T _j = 150 °C	2900			A
Freewheeling diode					
I _F	T _c = 25 (80) °C	390 (260)			A
I _{FRM}	t _p = 1 ms	600			A
I _{FSM}	t _p = 10 ms; sin.; T _j = 150 °C	2900			A
Characteristics		T _c = 25 °C, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
V _{GE(th)}	V _{GE} = V _{CE} , I _C = 12 mA	4,5	5,5	6,5	V
I _{CES}	V _{GE} = 0, V _{CE} = V _{CES} , T _j = 25 (125) °C		0,2	0,6	mA
V _{CE(TO)}	T _j = 25 (125) °C		1,1 (1,1)	1,25 (1,25)	V
r _{CE}	V _{GE} = 15 V, T _j = 25 (125) °C		3,3 (4,3)	4 (5,3)	mΩ
V _{CE(sat)}	I _{Cnom} = 300 A, V _{GE} = 15 V, chip level		2,1 (2,4)	2,45 (2,85)	V
C _{ies}	under following conditions		22	30	nF
C _{oes}	V _{GE} = 0, V _{CE} = 25 V, f = 1 MHz		3,3	4	nF
C _{res}			1,2	1,6	nF
L _{CE}				20	nH
R _{CC'+EE'}	res., terminal-chip T _c = 25 (125) °C		0,35 (0,5)		mΩ
t _{d(on)}	V _{CC} = 600 V, I _{Cnom} = 300 A		85		ns
t _r	R _{Gon} = R _{Goff} = 5 Ω, T _j = 125 °C		65		ns
t _{d(off)}	V _{GE} = ± 15 V		680		ns
t _f			56		ns
E _{on} (E _{off})			36 (42)		mJ
Inverse diode					
V _F = V _{EC}	I _{Fnom} = 300 A; V _{GE} = 0 V; T _j = 25 (125) °C		2 (1,8)	2,5	V
V _(TO)	T _j = (125) °C		(1,1)	(1,2)	V
r _T	T _j = (125) °C			(3,5)	mΩ
I _{RRM}	I _{Fnom} = 300 A; T _j = (125) °C		(136)		A
Q _{rr}	di/dt = A/μs		36		μC
E _{rr}	V _{GE} = V				mJ
FWD					
V _F = V _{EC}	I _F = 300 A; V _{GE} = 0 V, T _j = 25 (125) °C		2 (1,8)	2,5	V
V _(TO)	T _j = (125) °C		(1,1)	(1,2)	V
r _T	T _j = (125) °C			(3,5)	mΩ
I _{RRM}	I _F = 300 A; T _j = (125) °C		(136)		A
Q _{rr}	di/dt = A/μs		36		μC
E _{rr}	V _{GE} = V				mJ
Thermal characteristics					
R _{th(j-c)}	per IGBT			0,05	K/W
R _{th(j-c)D}	per Inverse Diode			0,125	K/W
R _{th(j-c)FD}	per FWD			0,125	K/W
R _{th(c-s)}	per module			0,038	K/W
Mechanical data					
M _s	to heatsink M6	3		5	Nm
M _t	to terminals M6	2,5		5	Nm
w				325	g







This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

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