

SKM 500GA123D



SEMITRANS™₄

IGBT Modules

SKM 500GA123D

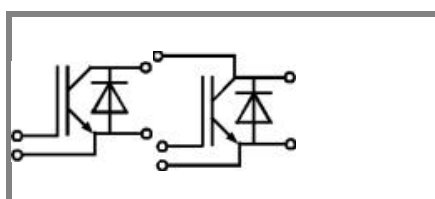
SKM 500GA123DS

Features

- MOS input (voltage controlled)
- N channel, homogeneous Si
- Low inductance case
- Very low tail current with low temperature dependence
- High short circuit capability, self limiting to $6 \times I_{Cnom}$
- Latch-up free
- Fast & soft CAL diodes
- Isolated copper baseplate using DBC Direct Copper Bonding Technology
- Large clearance (12 mm) and creepage distances (20 mm)

Typical Applications

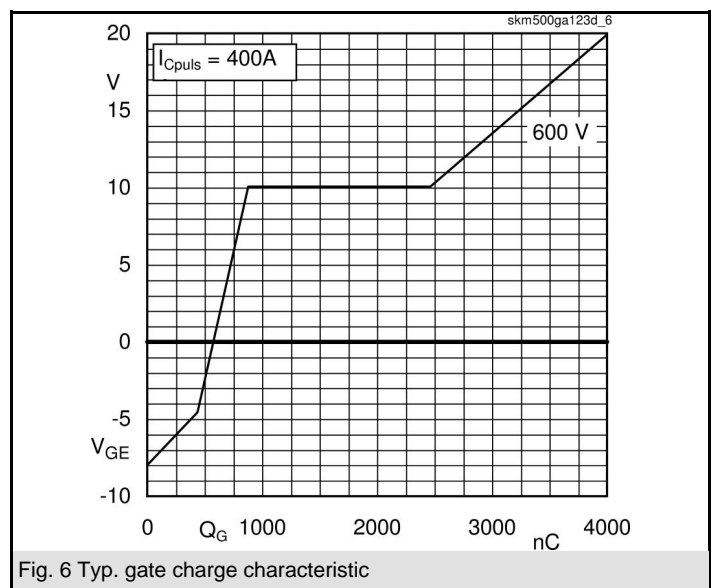
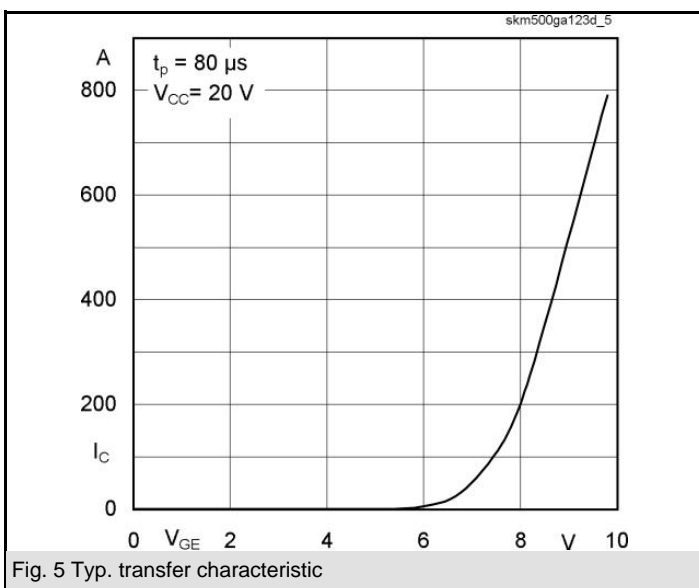
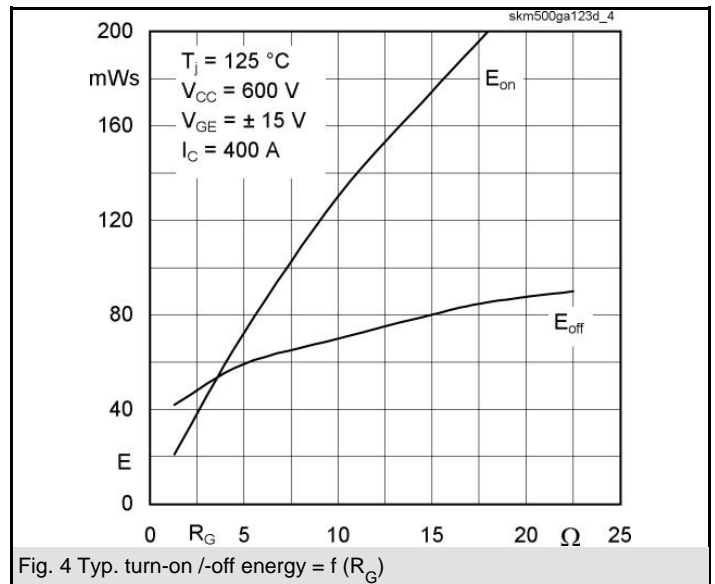
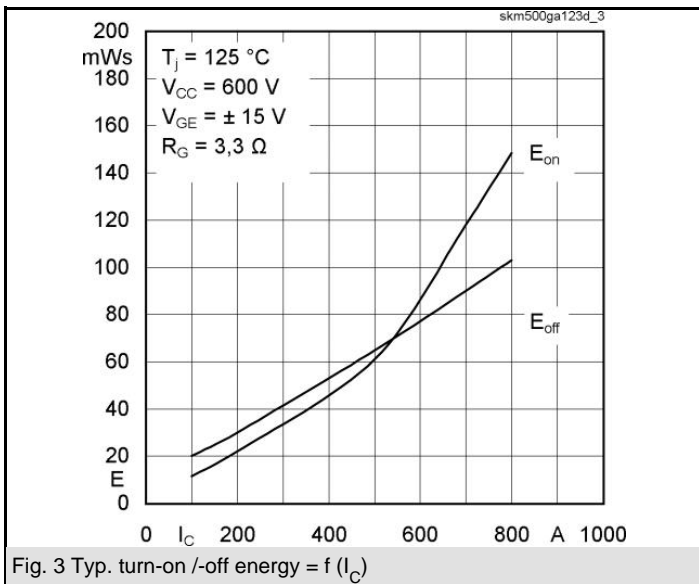
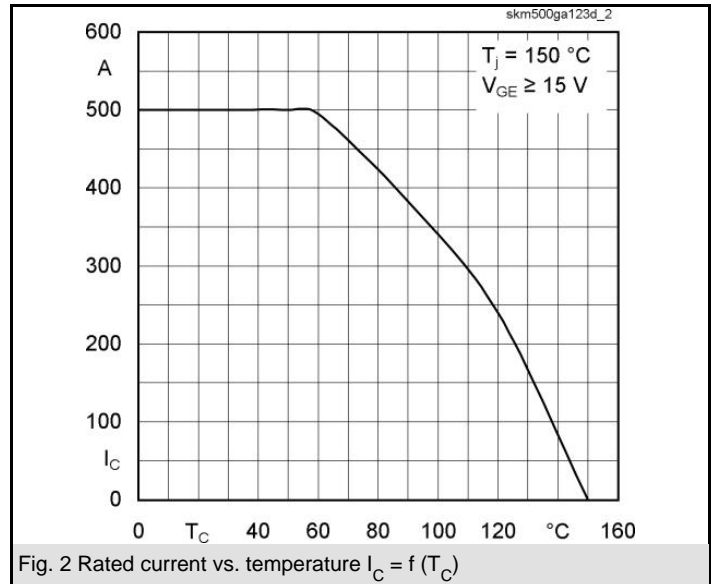
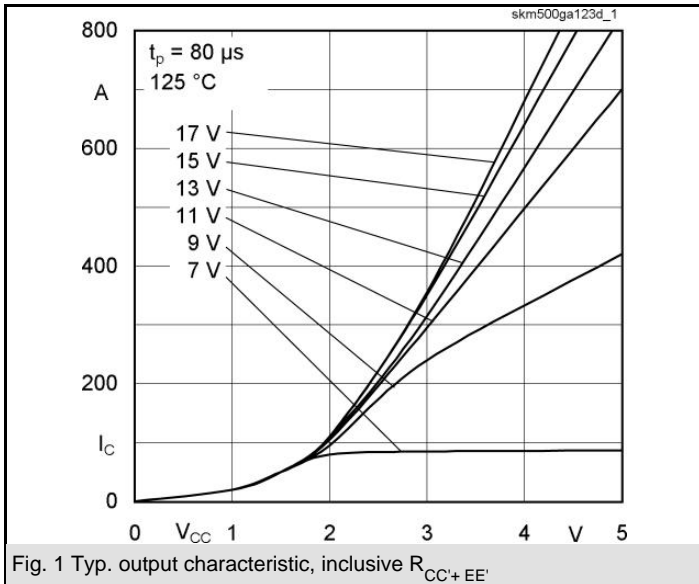
- Switching (not for linear use)

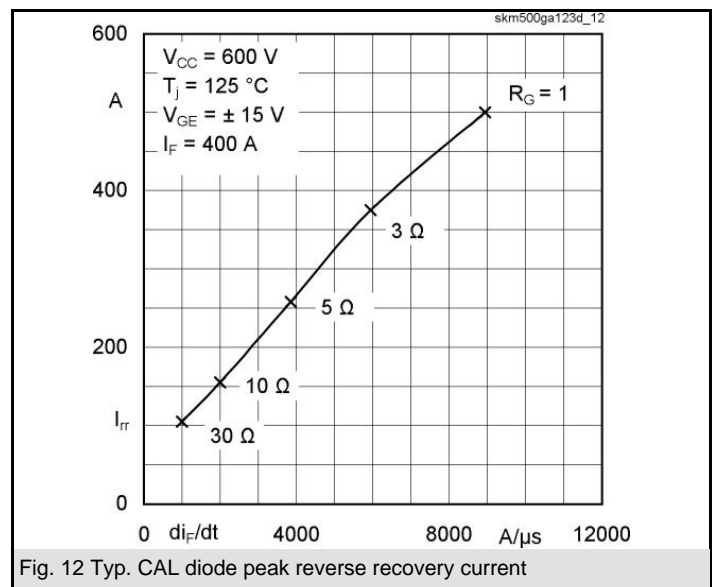
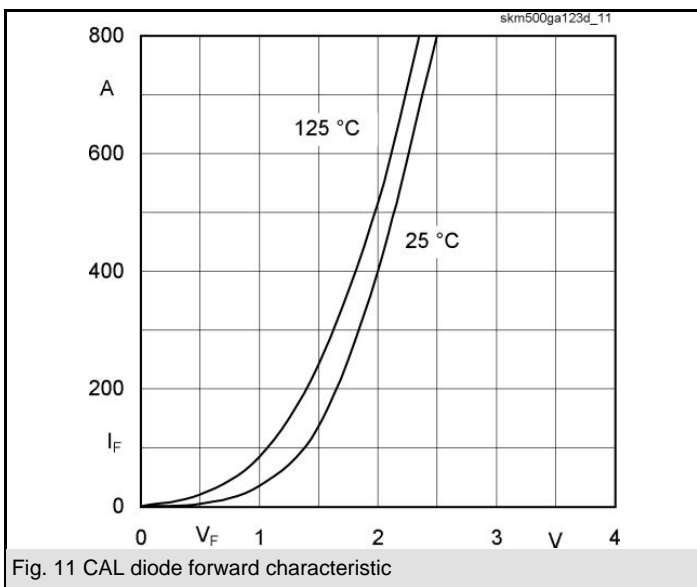
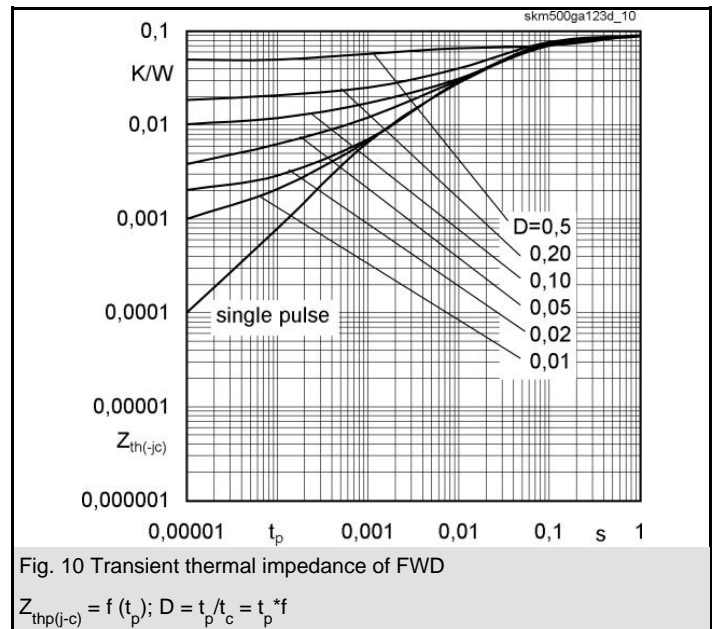
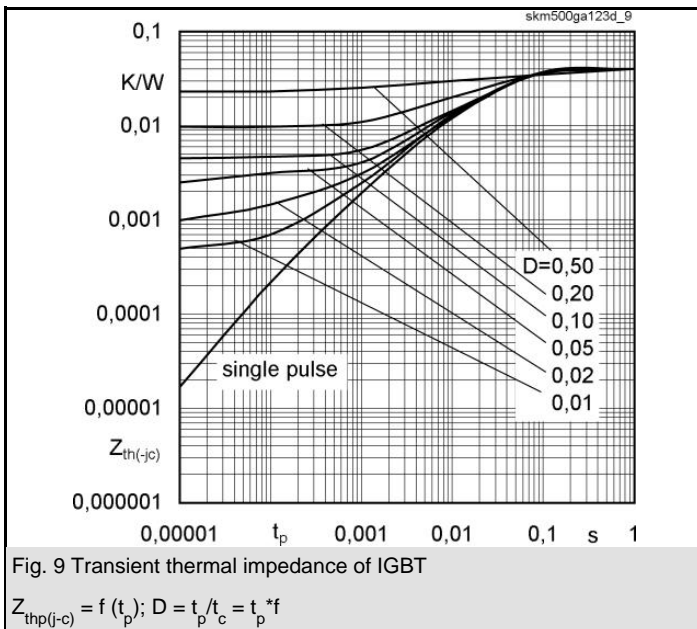
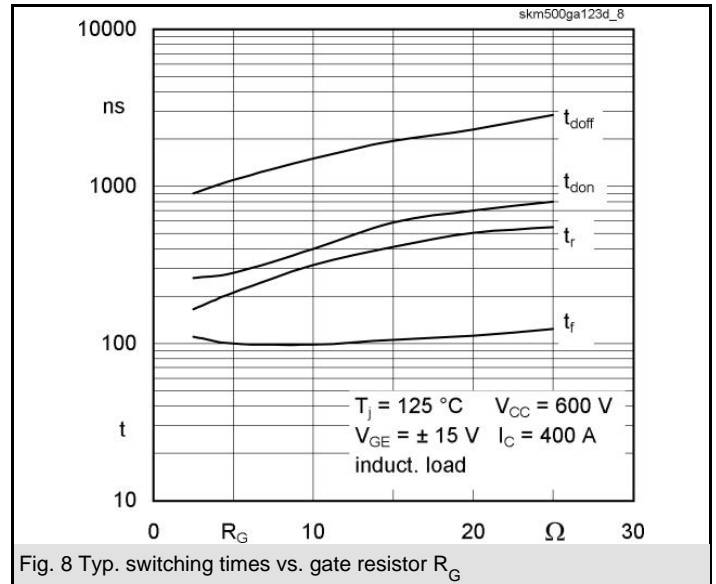
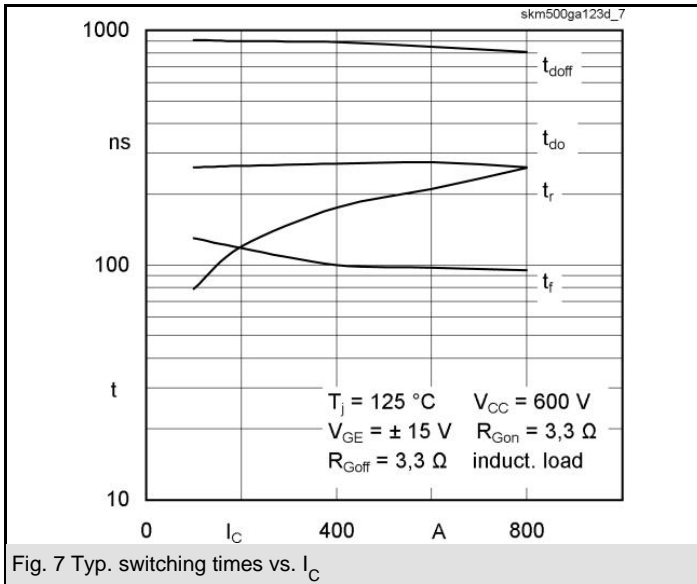


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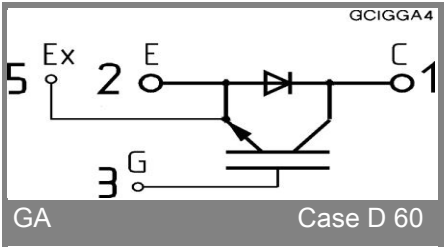
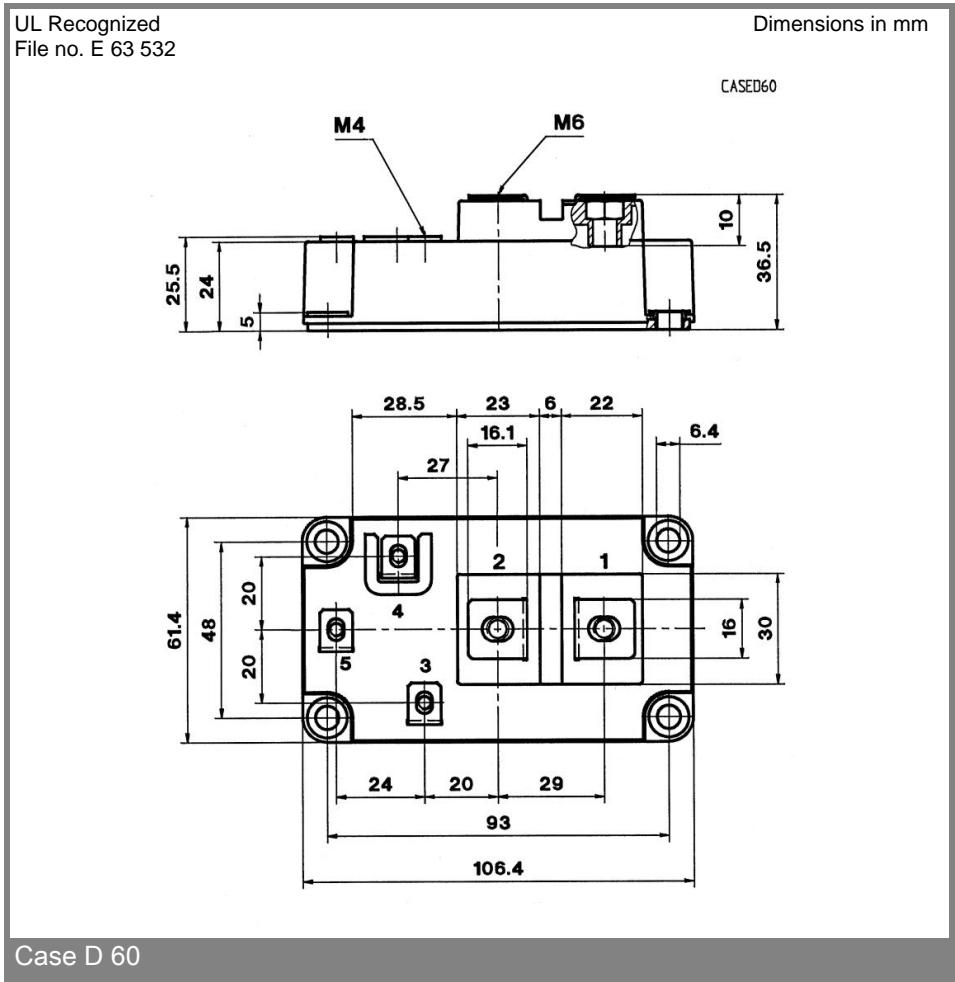
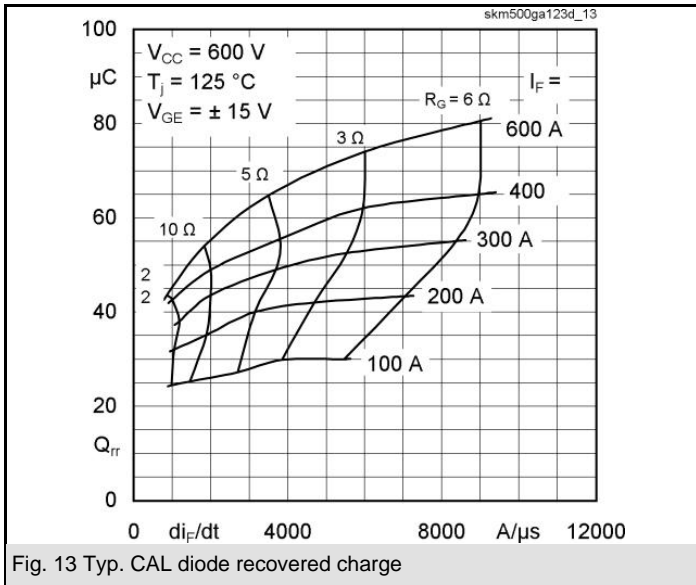
Absolute Maximum Ratings		$T_c = 25\text{ °C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1200	V
I_C	$T_c = 25\text{ (80) °C}$	500 (420)	A
I_{CRM}	$t_p = 1\text{ ms}$	800	A
V_{GES}		± 20	V
T_{vj} (T_{stg})	$T_{OPERATION} \leq T_{stg}$	- 40 ... + 150 (125)	°C
V_{isol}	AC, 1 min.	2500	V
Inverse diode			
I_F	$T_c = 25\text{ (80) °C}$	500 (350)	A
I_{FRM}	$t_p = 1\text{ ms}$	800	A
I_{FSM}	$t_p = 10\text{ ms}$; sin.; $T_j = 150\text{ °C}$	3600	A

Characteristics		$T_c = 25\text{ °C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}$; $I_C = 16\text{ mA}$	4,5	5,5	6,5	V
I_{CES}	$V_{GE} = 0$; $V_{CE} = V_{CES}$; $T_j = 25\text{ (125) °C}$		0,1	0,3	mA
$V_{CE(TO)}$	$T_j = 25\text{ (125) °C}$		1,4 (1,6)	1,6 (1,8)	V
r_{CE}	$V_{GE} = 15\text{ V}$; $T_j = 25\text{ (125) °C}$		2,75 (3,75)	3,5 (4,75)	mΩ
$V_{CE(sat)}$	$I_{Cnom} = 400\text{ A}$; $V_{GE} = 15\text{ V}$; chip level		2,5 (3,1)	3 (3,7)	V
C_{ies}	under following conditions		26	40	nF
C_{oes}	$V_{GE} = 0$; $V_{CE} = 25\text{ V}$; $f = 1\text{ MHz}$		4	5,2	nF
C_{res}			2	2,6	nF
L_{CE}				20	nH
$R_{CC'+EE'}$	res.; terminal-chip $T_c = 25\text{ (125) °C}$		0,18 (0,22)		mΩ
$t_{d(on)}$	$V_{CC} = 600\text{ V}$; $I_{Cnom} = 400\text{ A}$		250	600	ns
t_r	$R_{Gon} = R_{Goff} = 3,3\text{ Ω}$; $T_j = 125\text{ °C}$		170	340	ns
$t_{d(off)}$	$V_{GE} = \pm 15\text{ V}$		900	1100	ns
t_f			100	125	ns
$E_{on} (E_{off})$			45 (53)		mJ
Inverse diode					
$V_F = V_{EC}$	$I_{Fnom} = 400\text{ A}$; $V_{GE} = 0\text{ V}$; $T_j = 25\text{ (125) °C}$		2 (1,8)	2,5	V
$V_{(TO)}$	$T_j = 125\text{ () °C}$			1,2	V
r_T	$T_j = 125\text{ () °C}$		1,5	3	mΩ
I_{RRM}	$I_{Fnom} = 400\text{ A}$; $T_j = 25\text{ (125) °C}$		90 (160)		A
Q_{rr}	$di/dt = 2000\text{ A/μs}$		15 (50)		μC
E_{rr}	$V_{GE} = V$				mJ
Thermal characteristics					
$R_{th(j-c)}$	per IGBT			0,041	K/W
$R_{th(j-c)D}$	per Inverse Diode			0,09	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, M4				Nm
w				330	g





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

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.