

# SKM 75GB128DN



**SEMITRANS™ 2N**

## SPT IGBT Module

**SKM 75GB128DN**

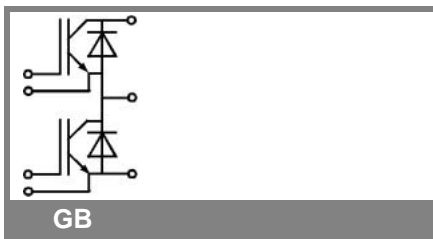
Preliminary Data

### Features

- Homogeneous Si
- SPT = Soft-Punch-Through technology
- $V_{CE(sat)}$  with positive temperature coefficient
- High short circuit capability, self limiting to  $6 \times I_C$

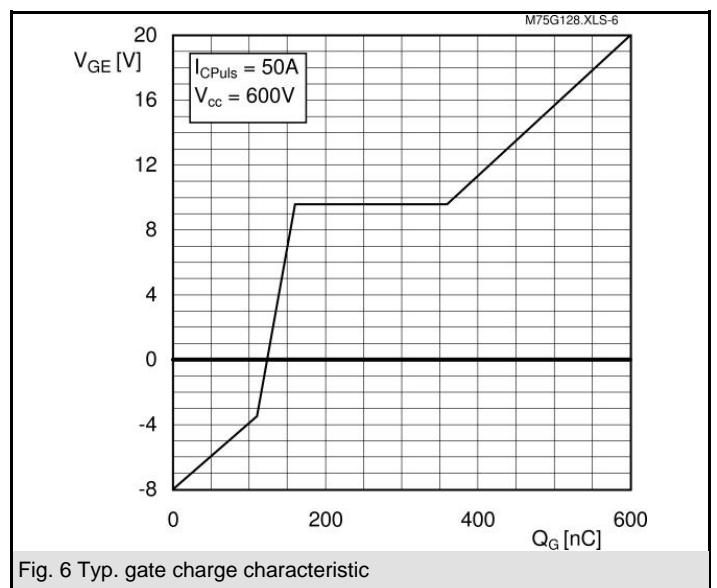
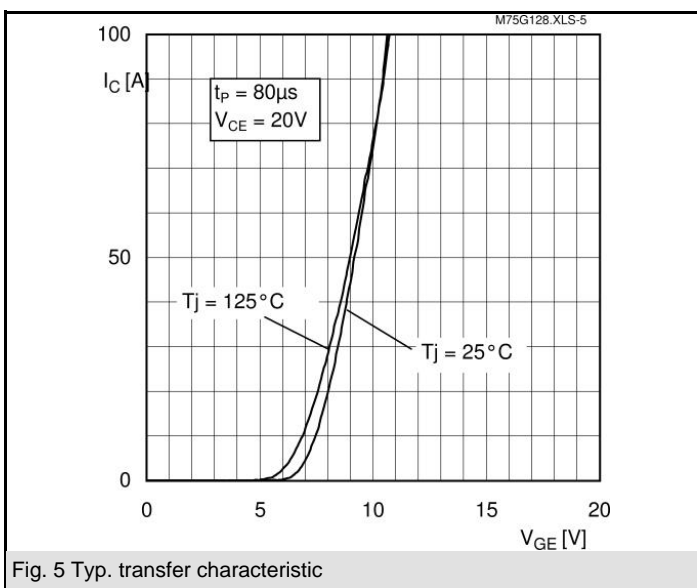
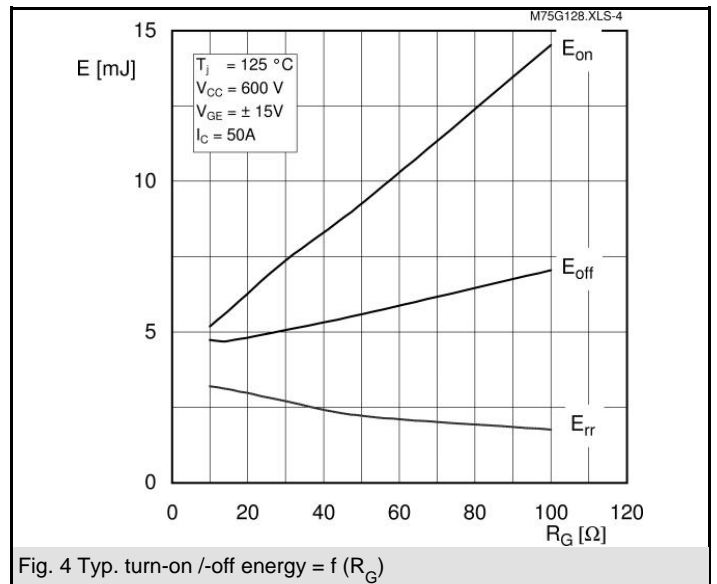
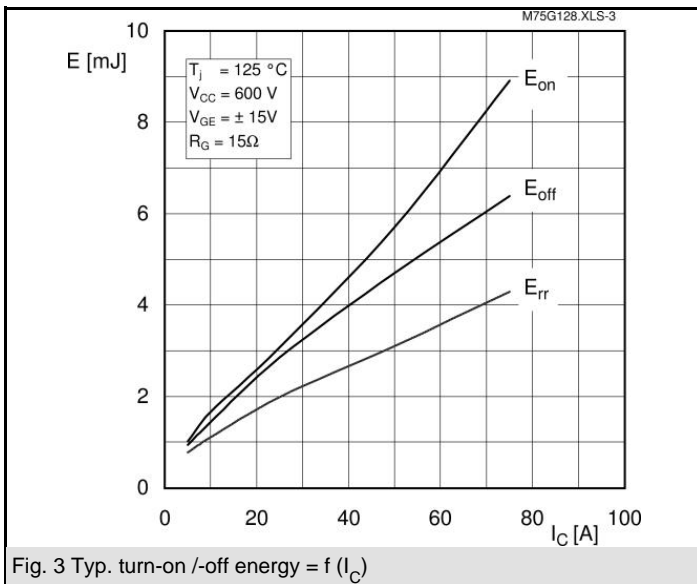
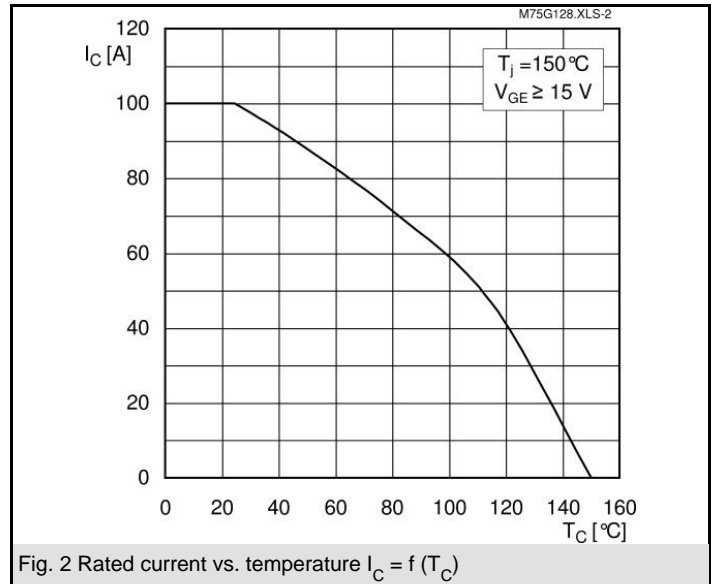
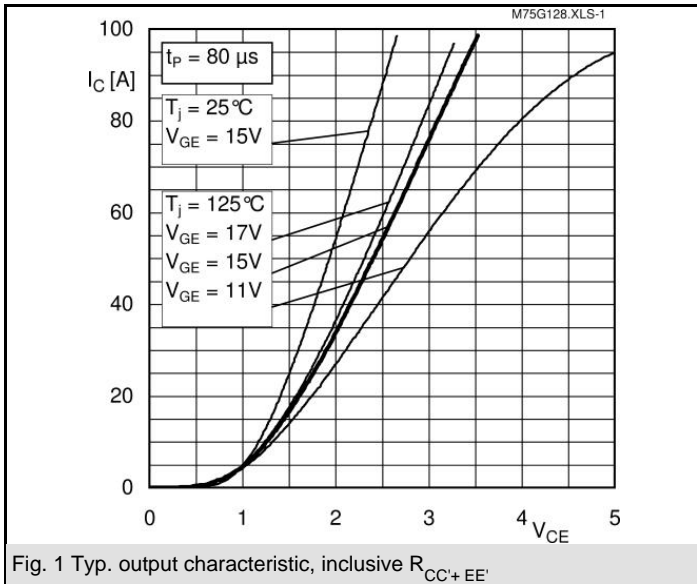
### Typical Applications

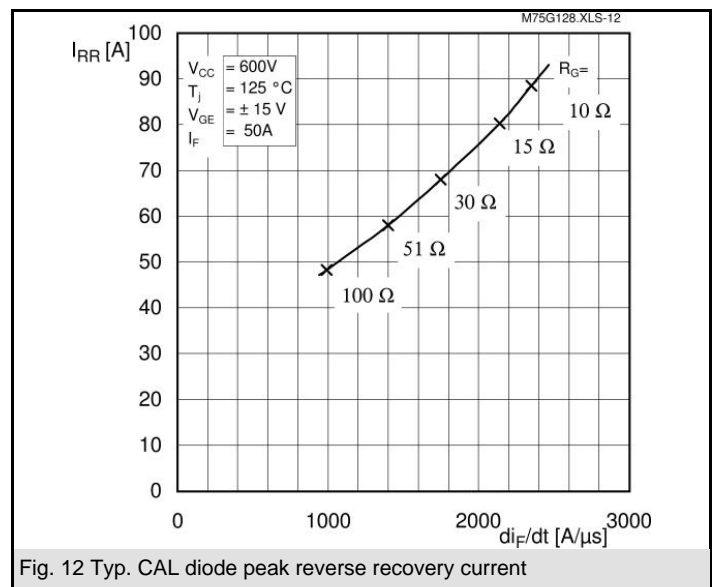
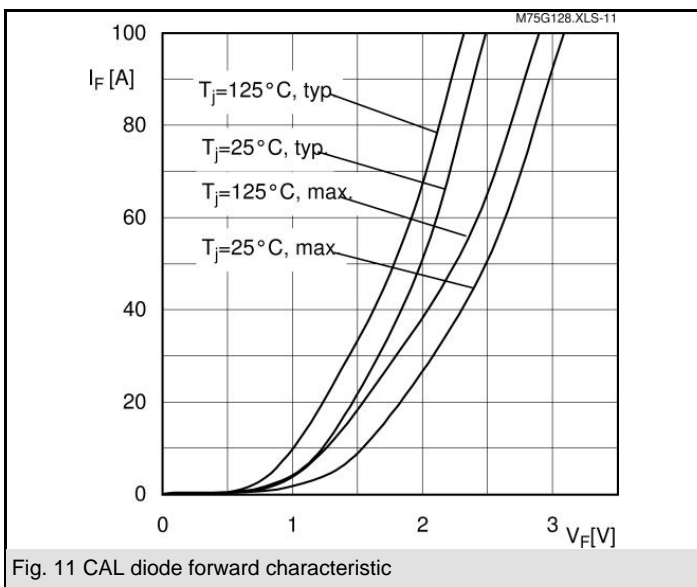
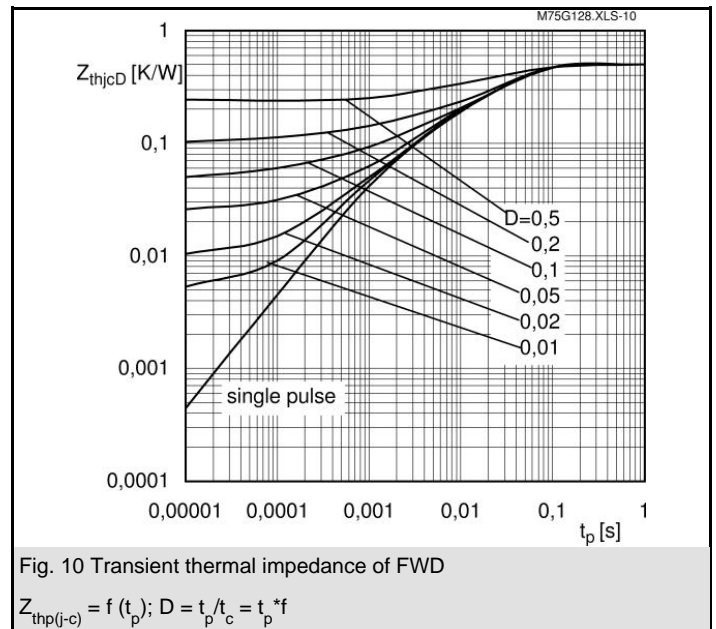
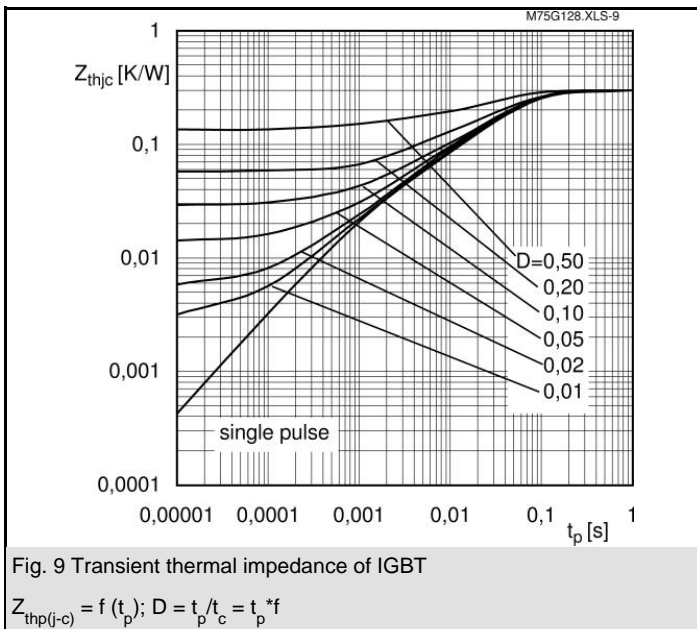
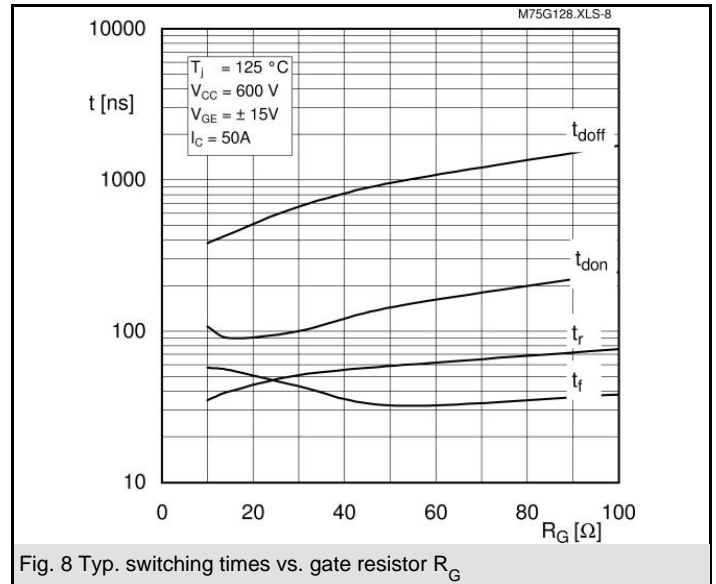
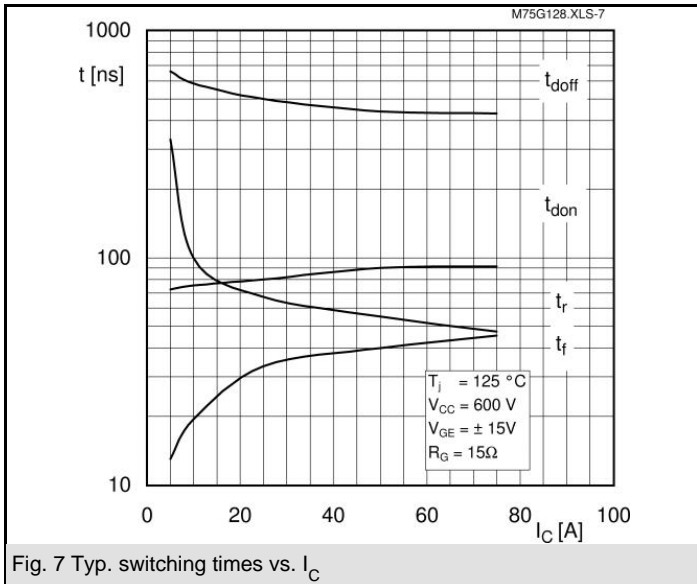
- AC inverter drives
- UPS
- Electronic welders at  $f_{sw} > 20$  kHz



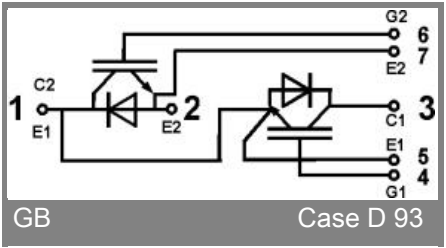
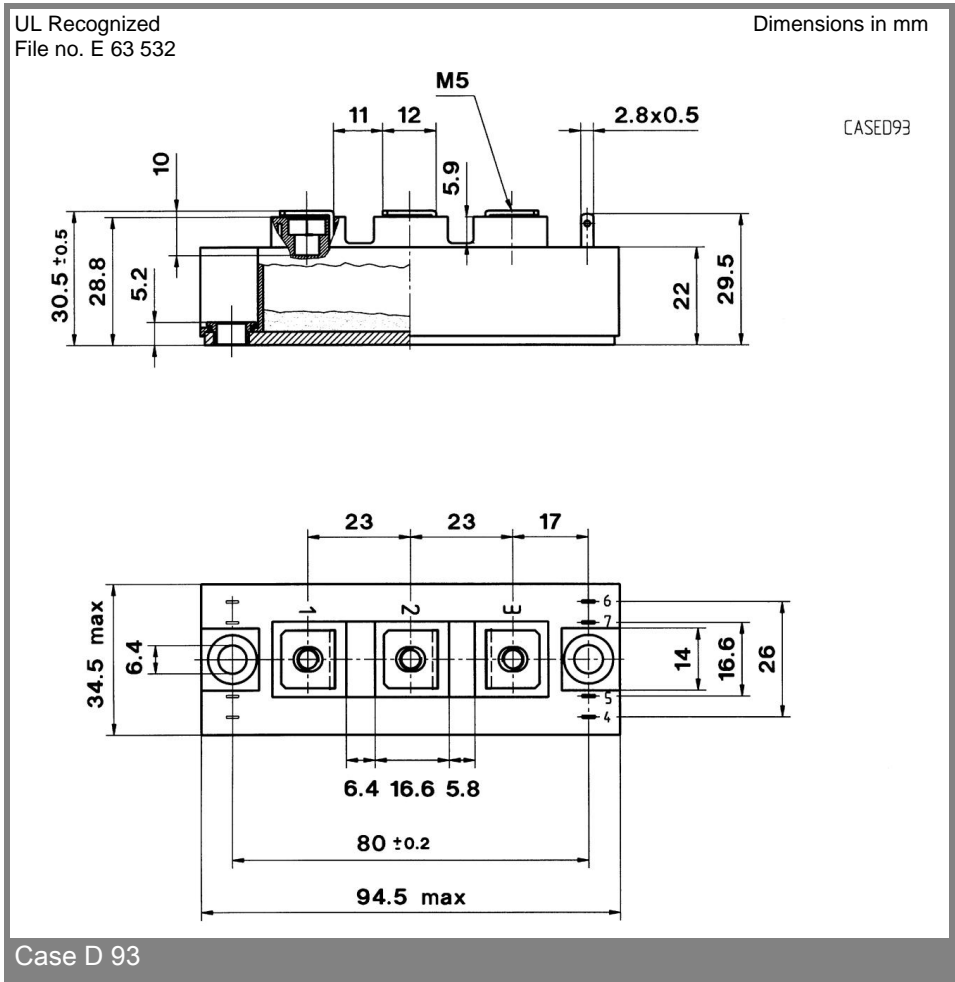
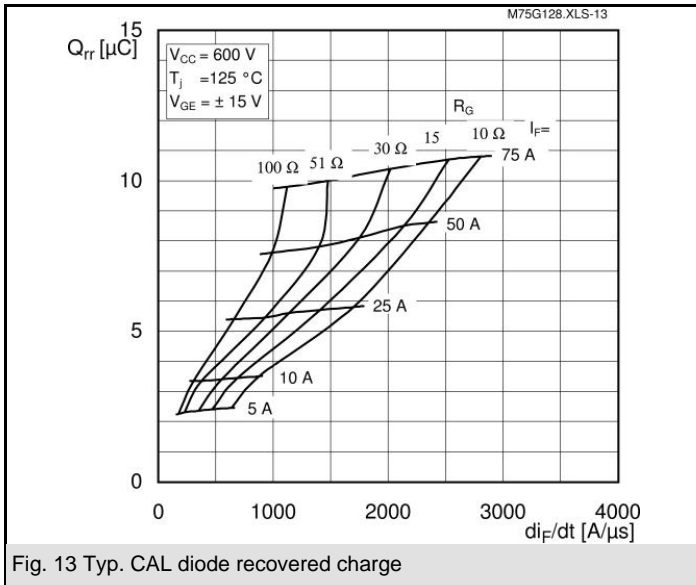
Absolute Maximum Ratings		$T_c = 25\text{ }^\circ\text{C}$ , unless otherwise specified	
Symbol	Conditions	Values	Units
<b>IGBT</b>			
$V_{CES}$		1200	V
$I_C$	$T_c = 25$ (80) $^\circ\text{C}$	100 (70)	A
$I_{CRM}$	$T_c = 25$ (80) $^\circ\text{C}$ , $t_p = 1$ ms	200 (140)	A
$V_{GES}$		$\pm 20$	V
$T_{vj}$ ( $T_{stg}$ )	$T_{OPERATION} \leq T_{stg}$	- 40...+ 150 (125)	$^\circ\text{C}$
$V_{isol}$	AC, 1 min.	4000	V
<b>Inverse diode</b>			
$I_F = -I_C$	$T_c = 25$ (80) $^\circ\text{C}$	75 (50)	A
$I_{FRM}$	$T_c = 25$ (80) $^\circ\text{C}$ , $t_p = 1$ ms	200 (140)	A
$I_{FSM}$	$t_p = 10$ ms; sin.; $T_j = 150\text{ }^\circ\text{C}$	550	A

Characteristics		$T_c = 25\text{ }^\circ\text{C}$ , unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
<b>IGBT</b>					
$V_{GE(th)}$	$V_{GE} = V_{CE}$ , $I_C = 2$ mA	4,5	5,5	6,5	V
$I_{CES}$	$V_{GE} = 0$ , $V_{CE} = V_{CES}$ , $T_j = 25$ (125) $^\circ\text{C}$		0,1	0,3	mA
$V_{CE(TO)}$	$T_j = 25$ (125) $^\circ\text{C}$		1 (0,9)	1,15 (1,05)	V
$r_{CE}$	$V_{GE} = 15$ V, $T_j = 25$ (125) $^\circ\text{C}$		18 (24)	24 (30)	m $\Omega$
$V_{CE(sat)}$	$I_C = 50$ A, $V_{GE} = 15$ V, chip level		1,9 (2,1)	2,35 (2,55)	V
$C_{ies}$	under following conditions		4,5		nF
$C_{oes}$	$V_{GE} = 0$ , $V_{CE} = 25$ V, $f = 1$ MHz		0,6		nF
$C_{res}$			0,55		nF
$L_{CE}$				25	nH
$R_{CC'+EE'}$	res., terminal-chip $T_c = 25$ (125) $^\circ\text{C}$		0,75 (1)		m $\Omega$
$t_{d(on)}$	$V_{CC} = 600$ V, $I_C = 50$ A		90		ns
$t_r$	$R_{Gon} = R_{Goff} = 15\text{ }^\Omega$ , $T_j = 125\text{ }^\circ\text{C}$		55		ns
$t_{d(off)}$	$V_{GE} \pm 15$ V		440		ns
$t_f$			40		ns
$E_{on} (E_{off})$			5,7 (4,7)		mJ
<b>Inverse diode</b>					
$V_F = V_{EC}$	$I_F = 50$ A; $V_{GE} = 0$ V; $T_j = 25$ (125) $^\circ\text{C}$		2 (1,8)	2,5	V
$V_{(TO)}$	$T_j = 25$ (125) $^\circ\text{C}$		1,1	1,2	V
$r_T$	$T_j = 25$ (125) $^\circ\text{C}$		18	26	m $\Omega$
$I_{RRM}$	$I_F = 50$ A; $T_j = 125$ ( ) $^\circ\text{C}$		80		A
$Q_{rr}$	$di/dt = 2100$ A/ $\mu\text{s}$		8,5		$\mu\text{C}$
$E_{rr}$	$V_{GE} = 0$ V		3,1		mJ
<b>Thermal characteristics</b>					
$R_{th(j-c)}$	per IGBT			0,3	K/W
$R_{th(j-c)D}$	per Inverse Diode			0,6	K/W
$R_{th(c-s)}$	per module			0,05	K/W
<b>Mechanical data</b>					
$M_s$	to heatsink M6	3		5	Nm
$M_t$	to terminals M5	2,5		5	Nm
w				160	g





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

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