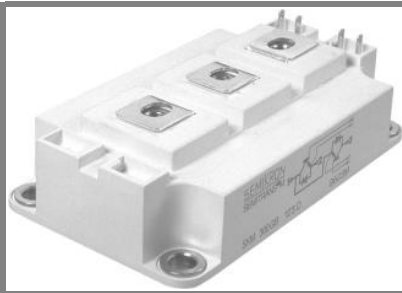


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SEMITRANS® 3

Superfast NPT-IGBT Modules

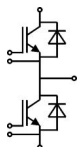
SKM 200GB063D

Features

- N channel, homogeneous Silicon structure (NPT - Non punch-through IGBT)
- Low tail current with low temperature dependence
- High short circuit capability, self limiting if term. G is clamped to E
- Pos. temp.-coeff. of V_{CEsat}
- 50 % less turn off losses
- 30 % less short circuit current
- Very low C_{ies} , C_{oes} , C_{res}
- Latch-up free
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Typical Applications

- Switched mode power supplies
- AC inverter servo drives
- UPS uninterruptable power supplies
- Welding inverters

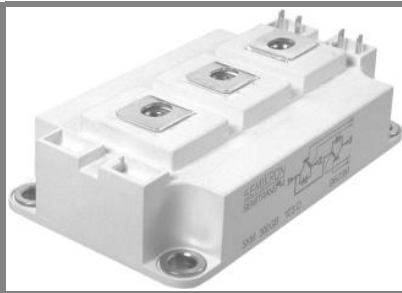


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Absolute Maximum Ratings		$T_c = 25^\circ\text{C}$, unless otherwise specified		
Symbol	Conditions	Values		Units
IGBT				
V_{CES}	$T_j = 25^\circ\text{C}$	600		V
I_C	$T_j = 150^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	260	A
		$T_{case} = 70^\circ\text{C}$	200	A
I_{CRM}	$I_{CRM} = 2 \times I_{Cnom}$	400		A
V_{GES}		± 20		V
t_{psc}	$V_{CC} = 300\text{ V}; V_{GE} \leq 20\text{ V}; T_j = 125^\circ\text{C}$ $V_{CES} < 600\text{ V}$	10		μs
Inverse Diode				
I_F	$T_j = 150^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	200	A
		$T_{case} = 80^\circ\text{C}$	135	A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$	400		A
I_{FSM}	$t_p = 10\text{ ms}; \text{sin.}$	$T_j = 150^\circ\text{C}$	1400	A
Module				
$I_{t(RMS)}$		500		A
T_{vj}		- 40 ... + 150		$^\circ\text{C}$
T_{stg}		- 40 ... + 125		$^\circ\text{C}$
V_{isol}	AC, 1 min.	2500		V

Characteristics		$T_c = 25^\circ\text{C}$, unless otherwise specified				
Symbol	Conditions	min.	typ.	max.	Units	
IGBT						
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 4\text{ mA}$	4,5	5,5	6,5	V	
I_{CES}	$V_{GE} = 0\text{ V}, V_{CE} = V_{CES}$	$T_j = 25^\circ\text{C}$		0,1	mA	
V_{CE0}		$T_j = 25^\circ\text{C}$		1,05	V	
		$T_j = 125^\circ\text{C}$		1	V	
r_{CE}	$V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}$		5,3	$\text{m}\Omega$	
		$T_j = 125^\circ\text{C}$		7	$\text{m}\Omega$	
$V_{CE(sat)}$	$I_{Cnom} = 200\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}_{chiplev.}$		2,1	V	
		$T_j = 125^\circ\text{C}_{chiplev.}$		2,4	V	
C_{ies}	$V_{CE} = 25, V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$		11,2	nF	
C_{oes}				1,25	nF	
C_{res}				0,75	nF	
Q_G	$V_{GE} = 0\text{ V} - +15\text{ V}$			480	nC	
R_{Gint}	$T_j = ^\circ\text{C}$			0	Ω	
$t_{d(on)}$	$R_{Gon} = 8\ \Omega$	$V_{CC} = 300\text{ V}$	$I_{Cnom} = 200\text{ A}$	140		ns
t_r				70		ns
E_{on}				11		mJ
$t_{d(off)}$	$R_{Goff} = 8\ \Omega$	$T_j = 125^\circ\text{C}$	$V_{GE} = \pm 15\text{ V}$	442		ns
t_f				45		ns
E_{off}				7,5		mJ
$R_{th(j-c)}$	per IGBT			0,14	K/W	

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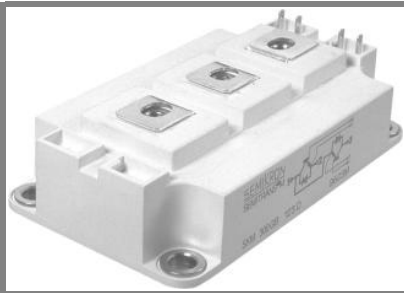
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Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 200 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$	1,55	1,9	V
		$T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$	1,55		V
V_{F0}				0,9	V
r_F			4	5,5	m Ω
I_{RRM}	$I_{Fnom} = 200 \text{ A}$		75		A
Q_{rr}			12,7		μC
E_{rr}	$V_{GE} = -15 \text{ V}; V_{CC} = 600 \text{ V}$				mJ
$R_{th(j-c)D}$	per diode			0,3	K/W
Module					
L_{CE}			15	20	nH
$R_{CC+EE'}$	res., terminal-chip	$T_{case} = 25 \text{ }^\circ\text{C}$	0,35		m Ω
		$T_{case} = 125 \text{ }^\circ\text{C}$	0,5		m Ω
$R_{th(c-s)}$	per module			0,038	K/W
M_s	to heat sink 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.

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

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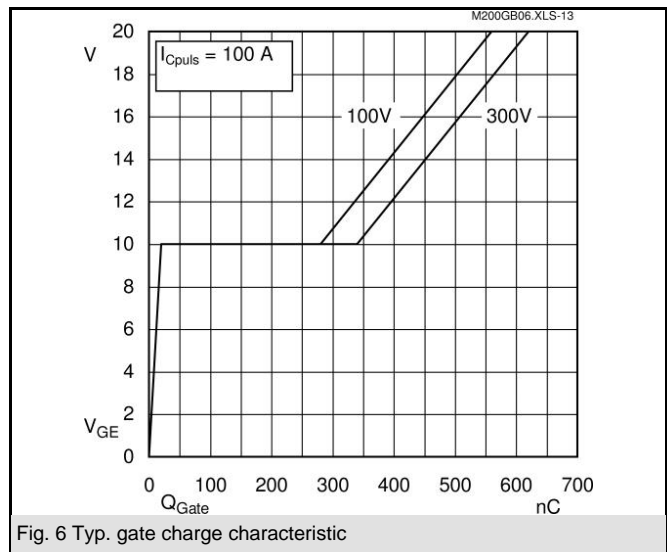
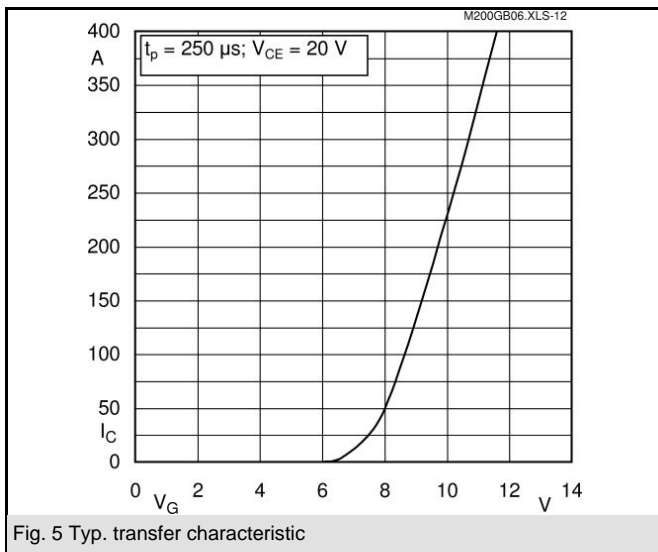
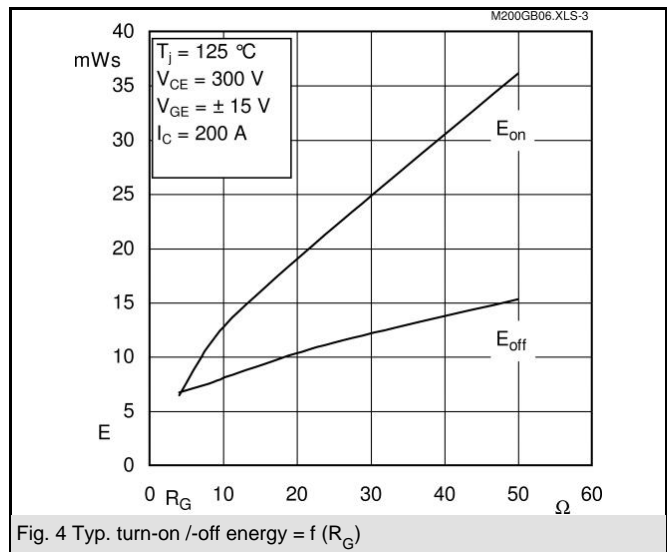
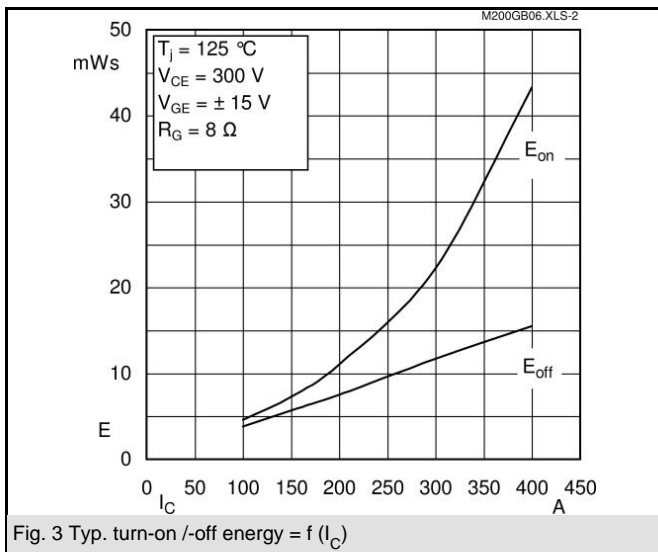
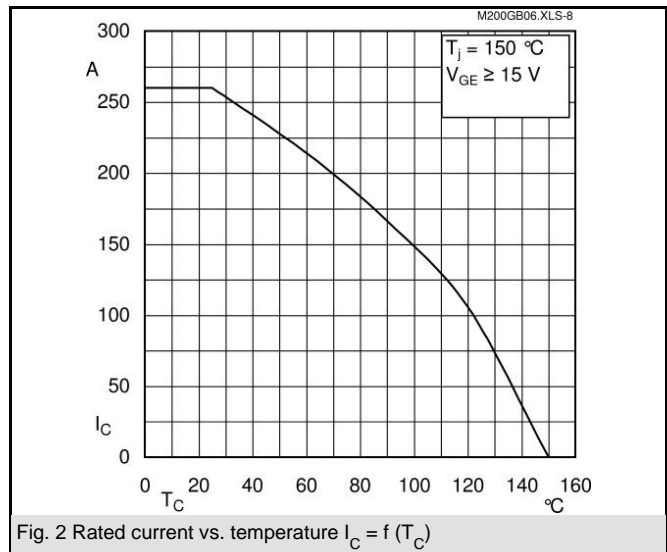
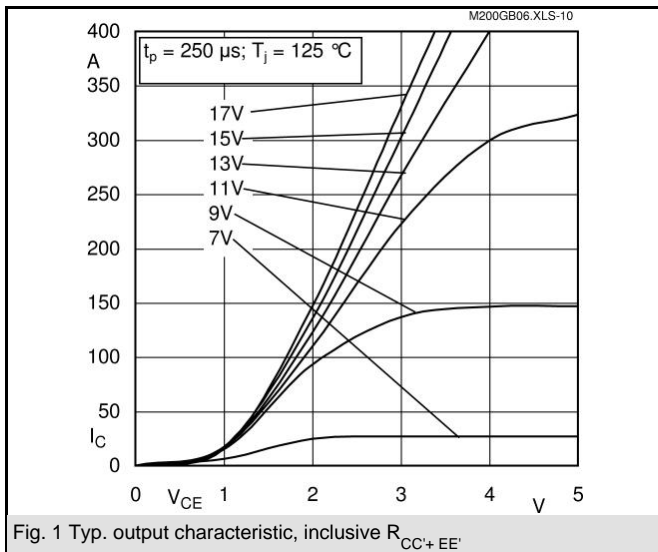
Typical Applications

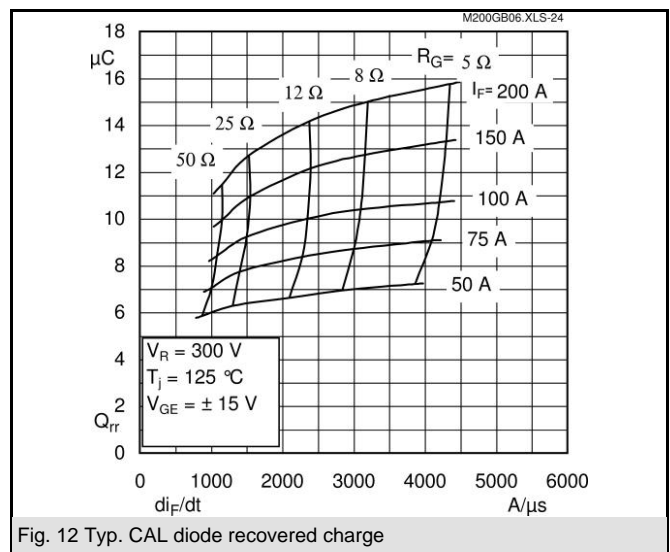
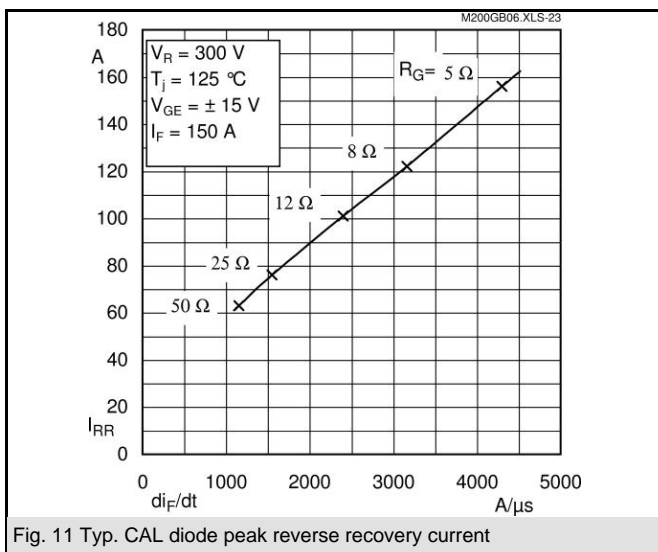
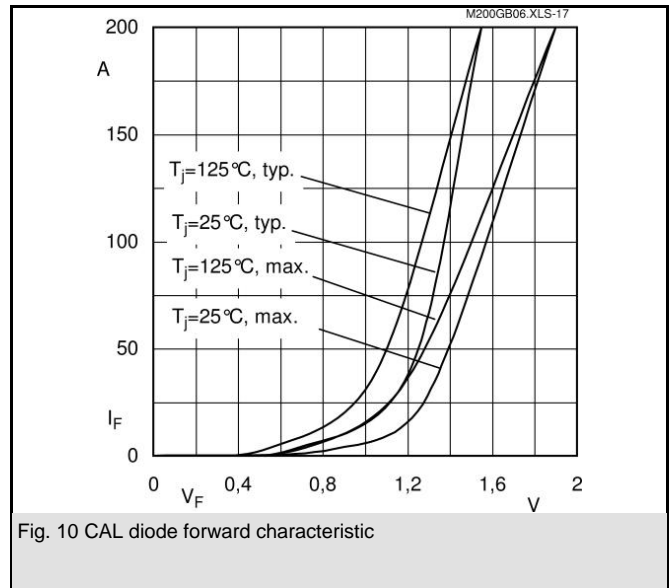
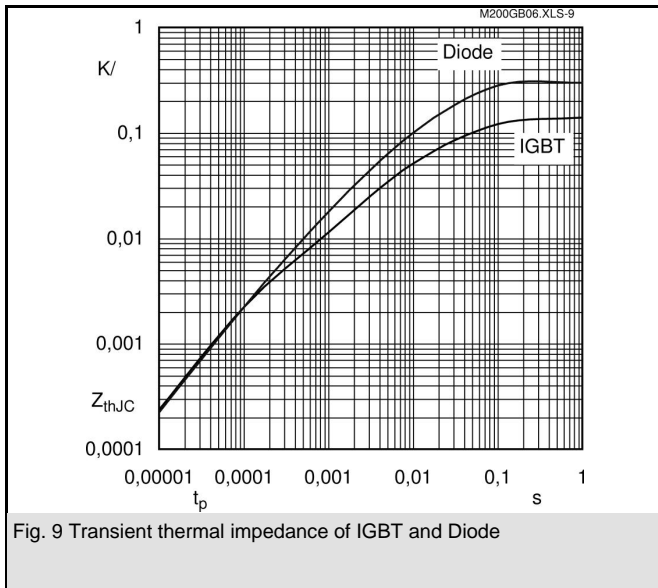
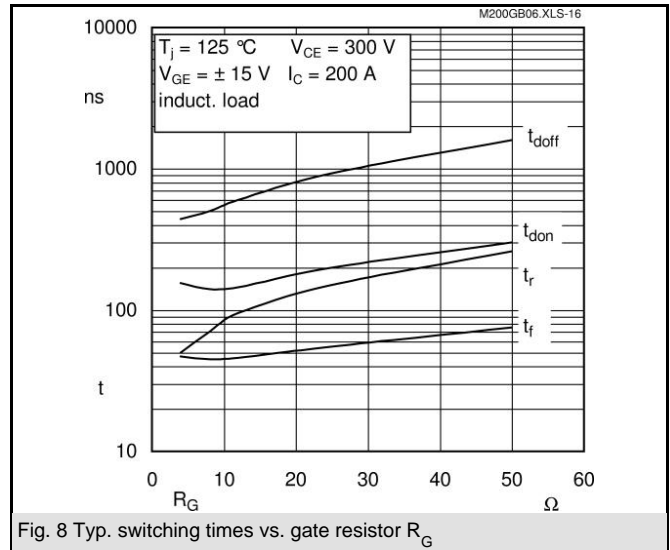
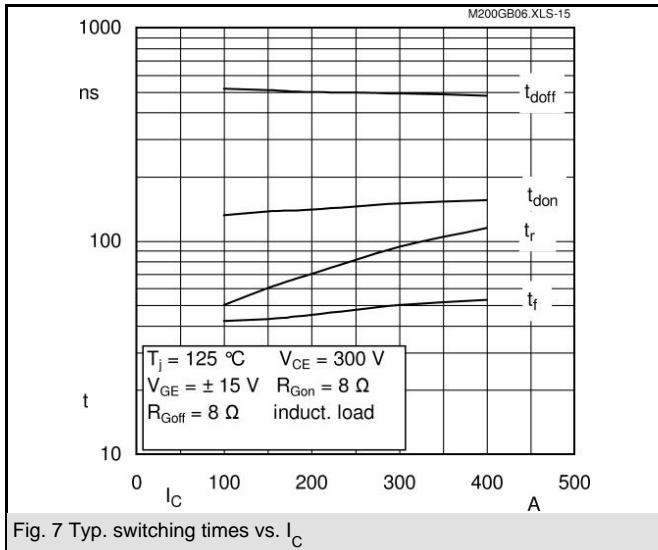
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Z_{th}		Values	Units
Symbol	Conditions		
$Z_{th(j-c)I}$			
R_{θ}	$i = 1$	90	mk/W
R_{θ}	$i = 2$	39	mk/W
R_{θ}	$i = 3$	9	mk/W
R_{θ}	$i = 4$	2	mk/W
τ_{θ}	$i = 1$	0,0416	s
τ_{θ}	$i = 2$	0,0139	s
τ_{θ}	$i = 3$	0,0021	s
τ_{θ}	$i = 4$	0,0001	s
$Z_{th(j-c)D}$			
R_{θ}	$i = 1$	200	mk/W
R_{θ}	$i = 2$	84	mk/W
R_{θ}	$i = 3$	14	mk/W
R_{θ}	$i = 4$	2	mk/W
τ_{θ}	$i = 1$	0,0275	s
τ_{θ}	$i = 2$	0,0413	s
τ_{θ}	$i = 3$	0,0019	s
τ_{θ}	$i = 4$	0,004	s



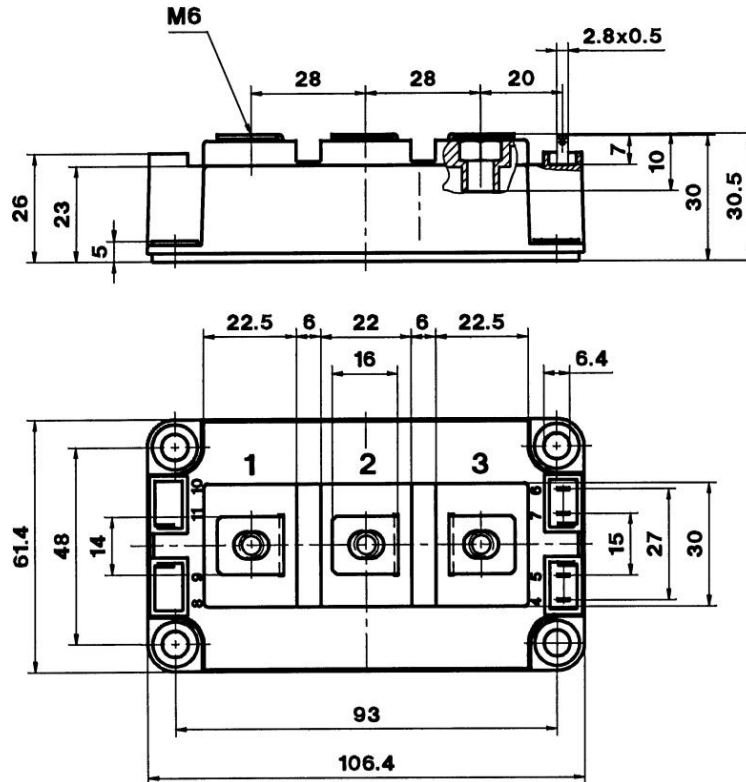


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UL recognized

CASED56

File no. E 63 532



Case D 56

