

SKM 100GB128D



SEMITRANS® 2

SPT IGBT Module

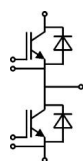
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Features

- SPT = Soft-Punch-Through technology
- V_{CEsat} 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} up to 20 kHz



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Absolute Maximum Ratings			T _c = 25 °C, unless otherwise specified	
Symbol	Conditions		Values	Units
IGBT				
V _{CES}	T _j = 25 °C		1200	V
I _C	T _j = 150 °C	T _c = 25 °C	145	A
		T _c = 80 °C	105	A
I _{CRM}	I _{CRM} =2xI _{Cnom}		150	A
V _{GES}			±20	V
t _{psc}	V _{CC} = 600 V; V _{GE} ≤ 20 V; T _j = 125 °C V _{CES} < 1200 V		10	μs
Inverse Diode				
I _F	T _j = 150 °C	T _{case} = 25 °C	95	A
		T _{case} = 80 °C	65	A
I _{FRM}	I _{FRM} =2xI _{Fnom}		150	A
I _{FSM}	t _p = 10 ms; sin.	T _j = 150 °C	720	A
Module				
I _{t(RMS)}			200	A
T _{vj}			- 40... + 150	°C
T _{stg}			- 40... + 125	°C
V _{isol}	AC, 1 min.		4000	V

Characteristics			T _c = 25 °C, unless otherwise specified				
Symbol	Conditions		min.	typ.	max.	Units	
IGBT							
V _{GE(th)}	V _{GE} = V _{CE} , I _C = 3 mA		4,5	5,5	6,45	V	
I _{CES}	V _{GE} = 0 V, V _{CE} = V _{CES} T _j = 25 °C			0,1	0,3	mA	
V _{CE0}				T _j = 25 °C	1	1,15	V
				T _j = 125 °C	0,9	1,05	V
r _{CE}	V _{GE} = 15 V			T _j = 25°C	13	16	mΩ
				T _j = 125°C	16	20	mΩ
V _{CE(sat)}	I _{Cnom} = 75 A, V _{GE} = 15 V			T _j = 25°C _{chiplev.}	1,9	2,35	V
				T _j = 125°C _{chiplev.}	2,1	2,55	V
C _{ies}	V _{CE} = 25, V _{GE} = 0 V f = 1 MHz				6,2		nF
C _{oes}					0,74		nF
C _{res}					0,71		nF
Q _G	V _{GE} = -8V - +20V				860		nC
R _{Gint}	T _j = 25 °C				5		Ω
t _{d(on)}	R _{Gon} = 4,7 Ω		V _{CC} = 600V I _{Cnom} = 75A		175		ns
t _r					38		ns
E _{on}					9		mJ
t _{d(off)}	R _{Goff} = 4,7 Ω		T _j = 125 °C V _{GE} = ±15V		370		ns
t _f					65		ns
E _{off}					7,5		mJ
R _{th(j-c)}	per IGBT				0,21		K/W

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Characteristics						
Symbol	Conditions		min.	typ.	max.	Units
Inverse Diode						
V _F = V _{EC}	I _{Fnom} = 75 A; V _{GE} = 0 V	T _j = 25 °C _{chiplev.}		2	2,5	V
		T _j = 125 °C _{chiplev.}		1,8		V
V _{F0}		T _j = 25 °C		1,1	1,2	V
r _F		T _j = 25 °C		12	17,3	mΩ
I _{RRM}	I _{Fnom} = 75 A di/dt = 2800 A/μs V _{GE} = -15 V; V _{CC} = 600 V	T _j = 125 °C		88		A
Q _{rr}				13		μC
E _{rr}				3,9		mJ
R _{th(j-c)D}	per diode				0,5	K/W
Module						
L _{CE}					30	nH
R _{CC'+EE'}	res., terminal-chip	T _{case} = 25 °C		0,75		mΩ
		T _{case} = 125 °C		1		mΩ
R _{th(c-s)}	per module				0,05	K/W
M _s	to heat sink M6			3	5	Nm
M _t	to terminals M5			2,5	5	Nm
w					160	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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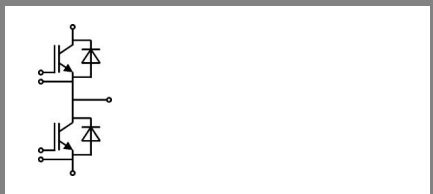
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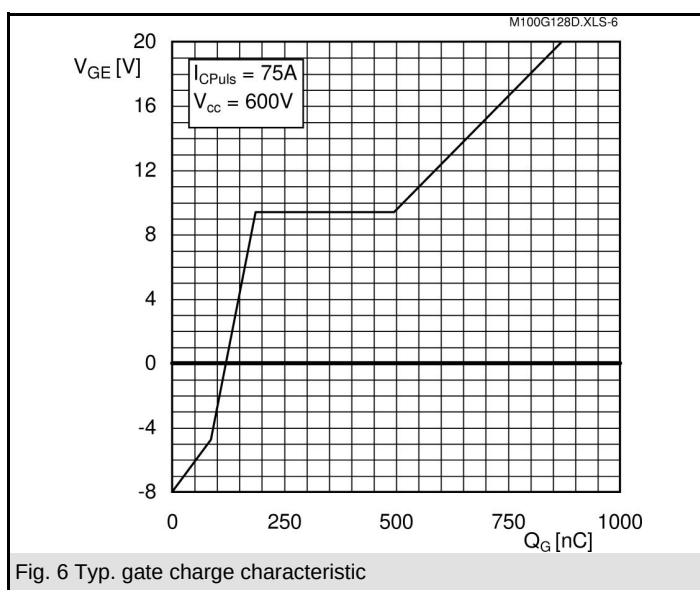
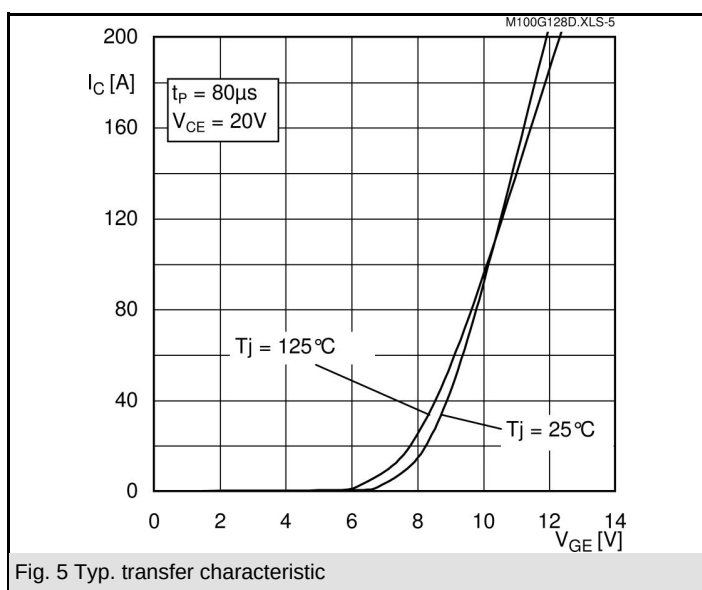
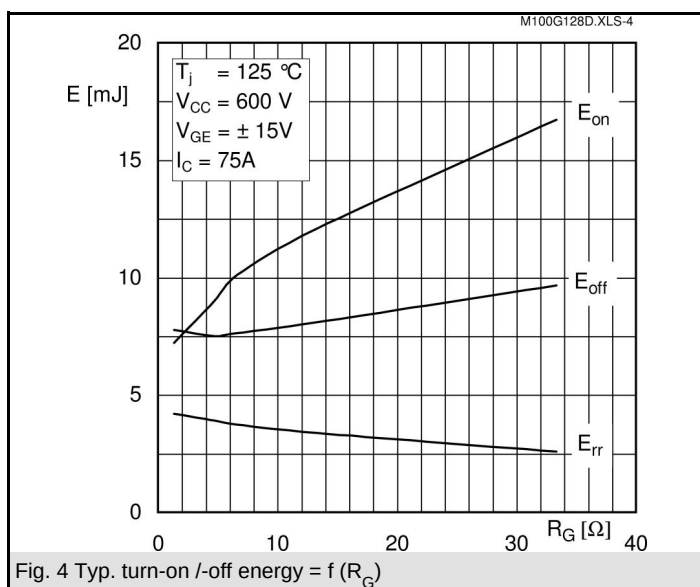
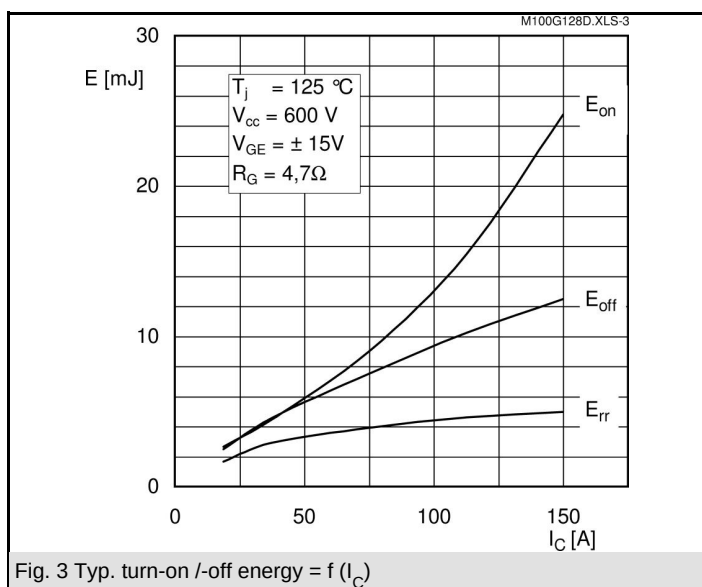
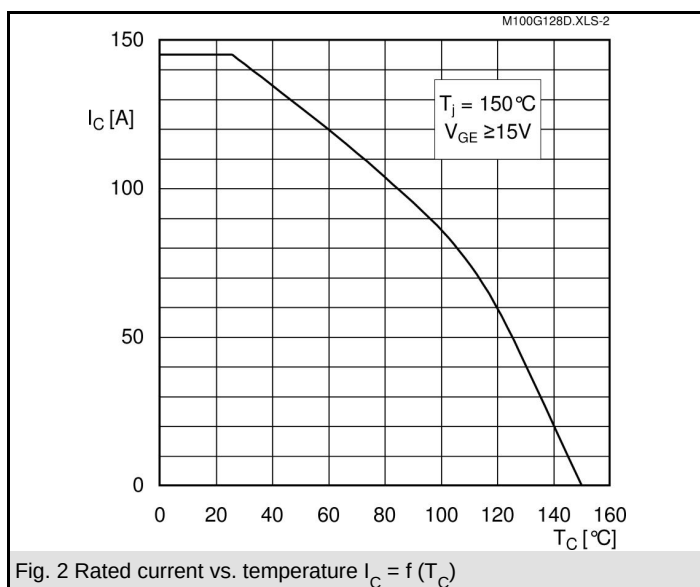
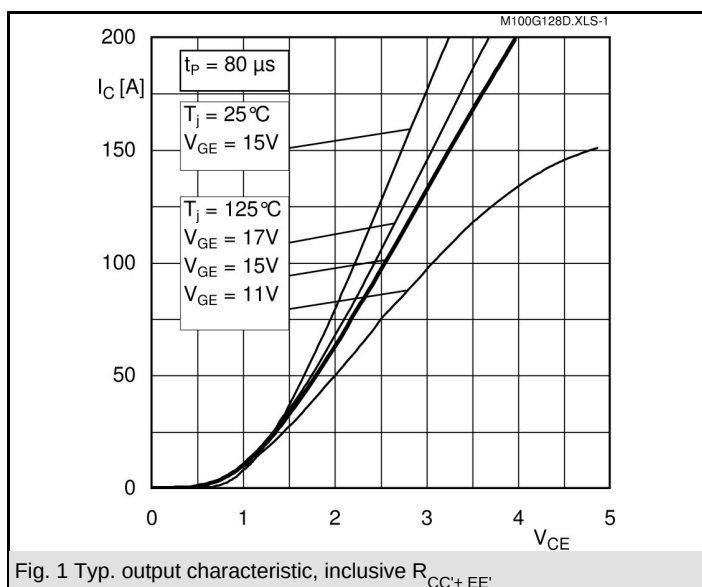
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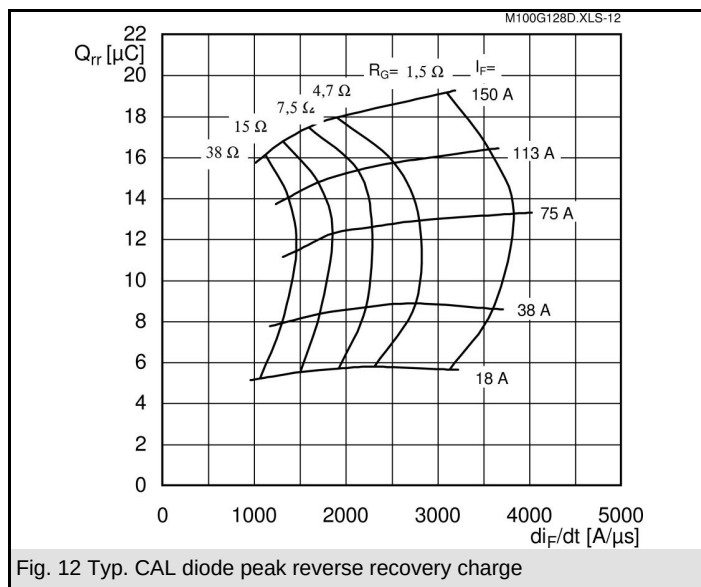
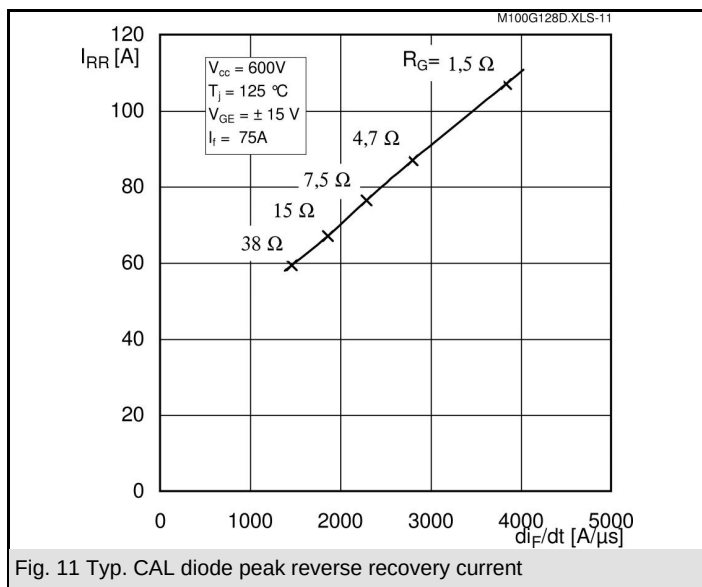
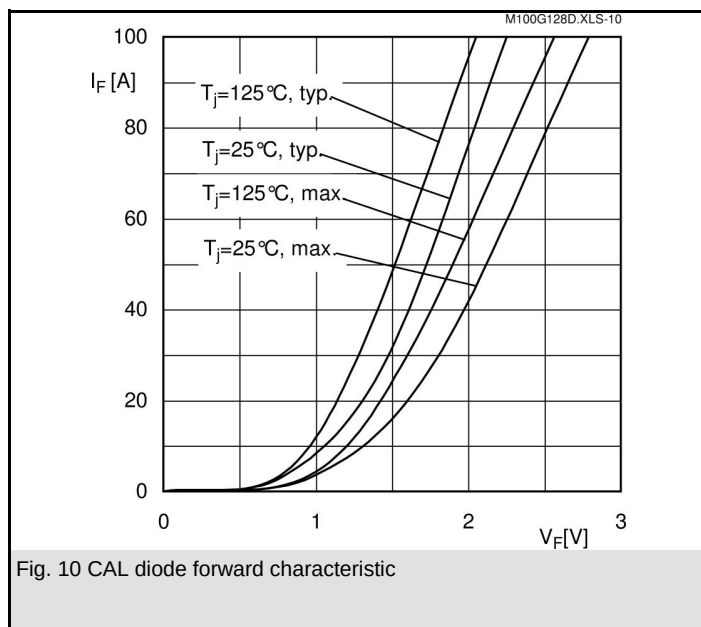
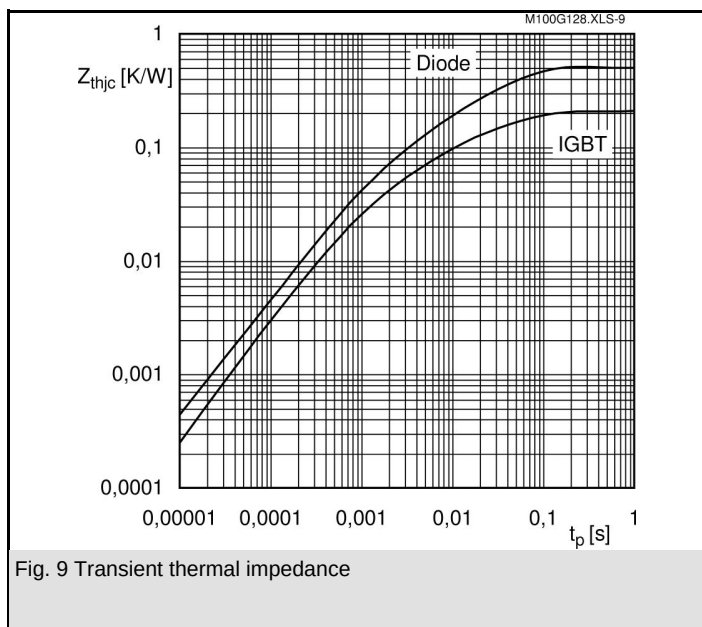
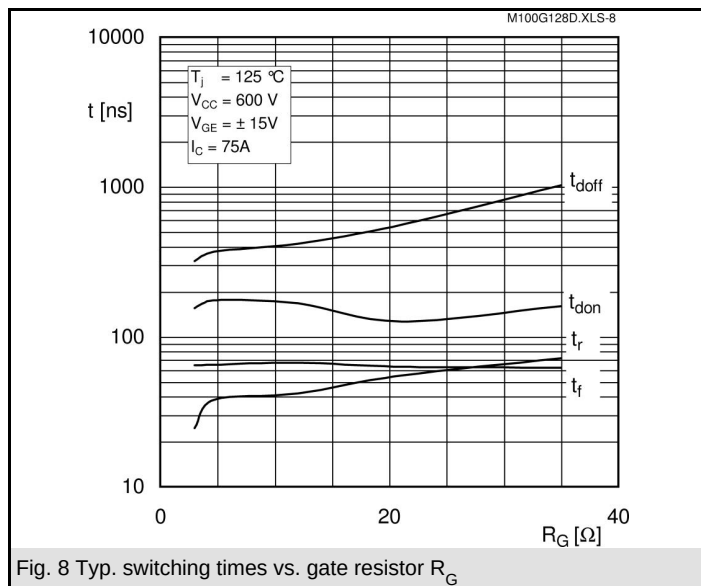
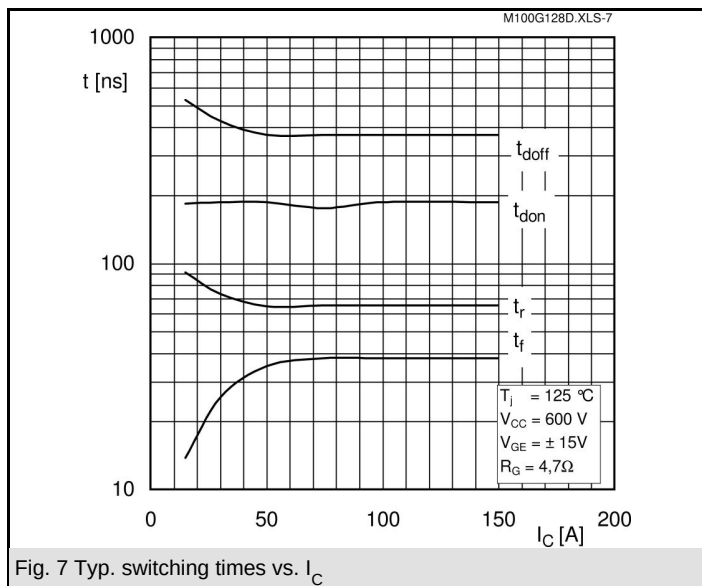
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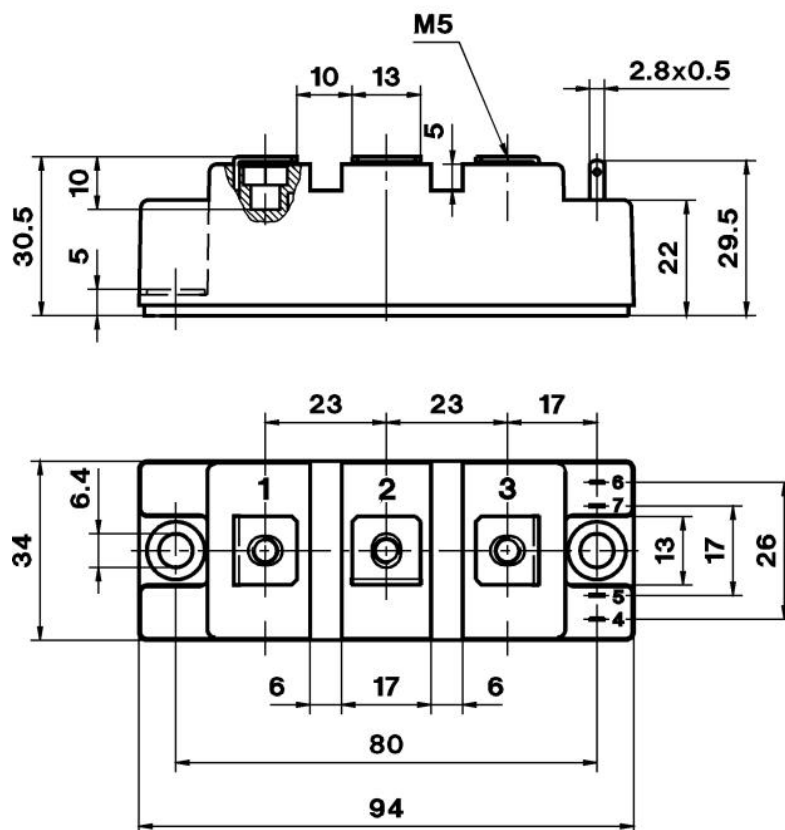


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Z_{th}			
Symbol	Conditions	Values	Units
$Z_{th(j-c)I}$			
R_i	$i = 1$	114	mk/W
R_i	$i = 2$	71	mk/W
R_i	$i = 3$	22	mk/W
R_i	$i = 4$	3	mk/W
τ_{u_i}	$i = 1$	0,054	s
τ_{u_i}	$i = 2$	0,0115	s
τ_{u_i}	$i = 3$	0,0012	s
τ_{u_i}	$i = 4$	0,001	s
$Z_{th(j-c)D}$			
R_i	$i = 1$	300	mk/W
R_i	$i = 2$	160	mk/W
R_i	$i = 3$	35,5	mk/W
R_i	$i = 4$	4,5	mk/W
τ_{u_i}	$i = 1$	0,054	s
τ_{u_i}	$i = 2$	0,0071	s
τ_{u_i}	$i = 3$	0,0017	s
τ_{u_i}	$i = 4$	0,005	s







Case D 61

