

SKM 400GA128D



SEMITRANS® 4

SPT IGBT Modules

SKM 400GA128D

Features

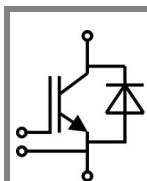
- SPT = Soft-Punch-Through technology
- V_{CEsat} with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_C$

Typical Applications

- AC inverter drives
- UPS
- Electronic welders at f_{sw} up to 20 kHz

Remarks

- $I_{DC} \leq 500 \text{ A}$ for $T_{Terminal} = 100 \text{ }^\circ\text{C}$



GA

Absolute Maximum Ratings		$T_c = 25^\circ\text{C}$, unless otherwise specified		
Symbol	Conditions	Values		Units
IGBT				
V_{CES}	$T_j = 25^\circ\text{C}$	1200		V
I_C	$T_j = 150^\circ\text{C}$	$T_c = 25^\circ\text{C}$	565	A
		$T_c = 80^\circ\text{C}$	400	A
I_{CRM}	$I_{CRM} = 2 \times I_{Cnom}$	600		A
V_{GES}		± 20		V
t_{psc}	$V_{CC} = 600 \text{ V}; V_{GE} \leq 20 \text{ V}; T_j = 125^\circ\text{C}$ $V_{CES} < 1200 \text{ V}$	10		μs
Inverse Diode				
I_F	$T_j = 150^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	390	A
		$T_{case} = 80^\circ\text{C}$	260	A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$	600		A
I_{FSM}	$t_p = 10 \text{ ms}; \text{sin.}$	$T_j = 150^\circ\text{C}$	2900	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.	4000		V

Characteristics		$T_c = 25^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}; I_C = 12 \text{ mA}$	4,5	5,5	6,45	V
I_{CES}	$V_{GE} = 0 \text{ V}, V_{CE} = V_{CES}$	$T_j = 25^\circ\text{C}$	0,2	0,6	mA
		$T_j = 125^\circ\text{C}$	0,9	1,05	V
V_{CE0}			1	1,15	V
r_{CE}	$V_{GE} = 15 \text{ V}$	$T_j = 25^\circ\text{C}$	3	4	$\text{m}\Omega$
		$T_j = 125^\circ\text{C}$	4	5	$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 300 \text{ A}, V_{GE} = 15 \text{ V}$	$T_j = 25^\circ\text{C}_{chiplev.}$	1,9	2,35	V
		$T_j = 125^\circ\text{C}_{chiplev.}$	2,1	2,55	V
C_{ies}	$V_{CE} = 25, V_{GE} = 0 \text{ V}$	$f = 1 \text{ MHz}$	26		nF
C_{oes}			3		nF
C_{res}			3		nF
Q_G	$V_{GE} = -8\text{V} - +20\text{V}$	3500		nC	
R_{Gint}	$T_j = ^\circ\text{C}$	1,25		Ω	
$t_{d(on)}$	$R_{Gon} = 5 \Omega$	$V_{CC} = 600\text{V}$ $I_{Cnom} = 300\text{A}$	120		ns
t_r			70		ns
E_{on}			31		mJ
$t_{d(off)}$	$R_{Goff} = 5 \Omega$	$T_j = 125^\circ\text{C}$ $V_{GE} = \pm 15\text{V}$	800		ns
t_f			75		ns
E_{off}			33		mJ
$R_{th(j-c)}$	per IGBT	0,055		K/W	

SKM 400GA128D



SEMITRANS® 4

SPT IGBT Modules

SKM 400GA128D

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

Remarks

- $I_{DC} \leq 500 \text{ A}$ for $T_{Terminal} = 100 \text{ °C}$

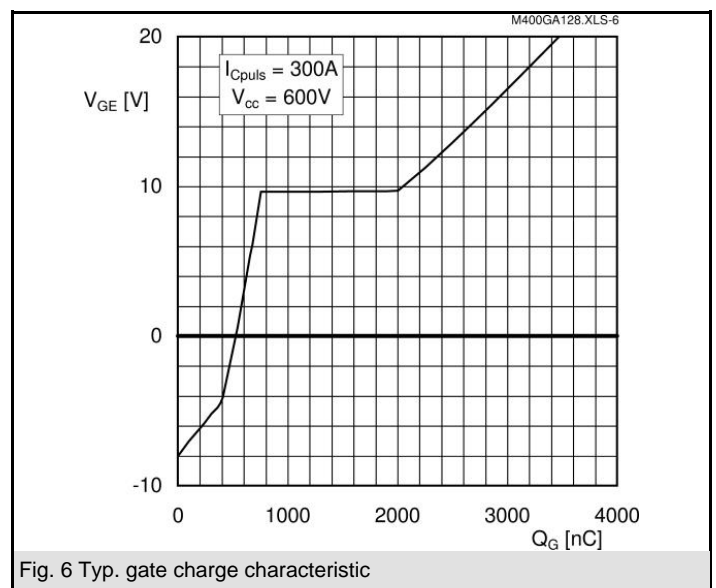
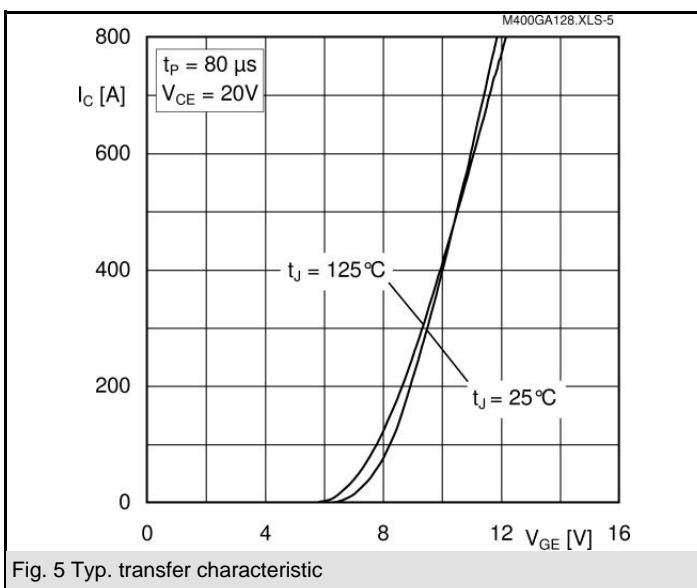
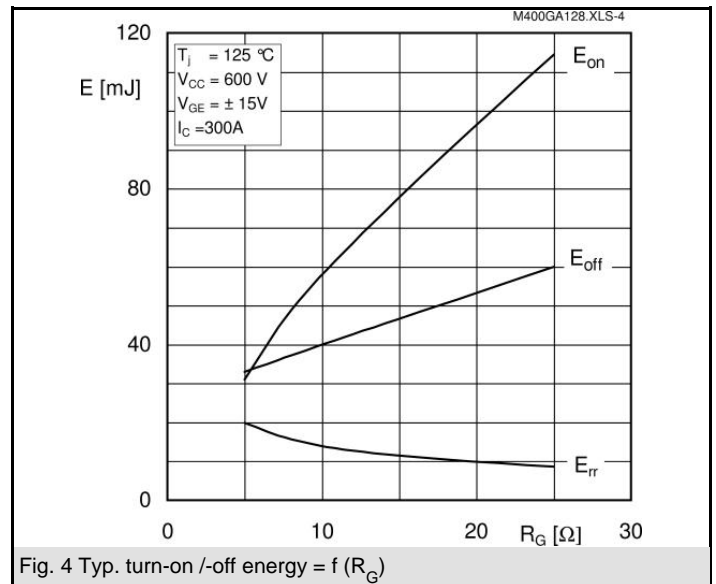
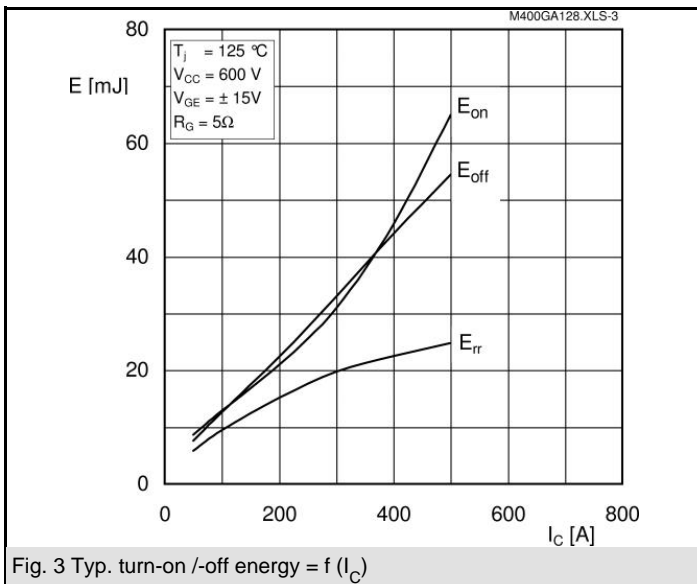
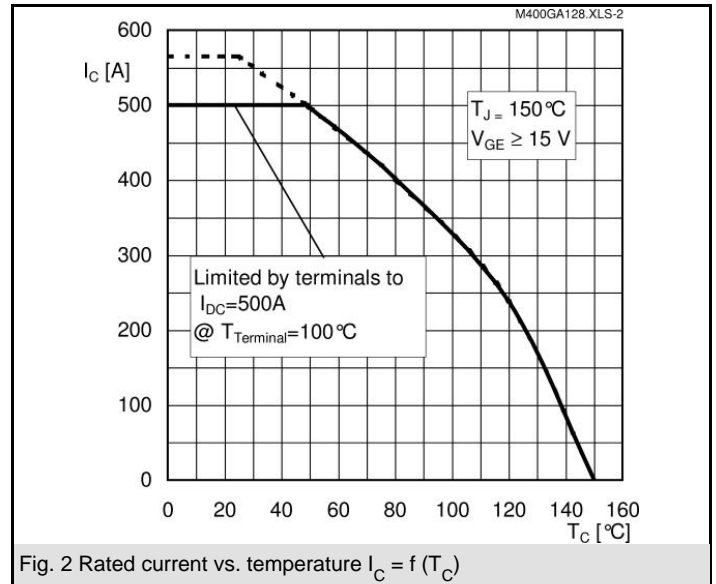
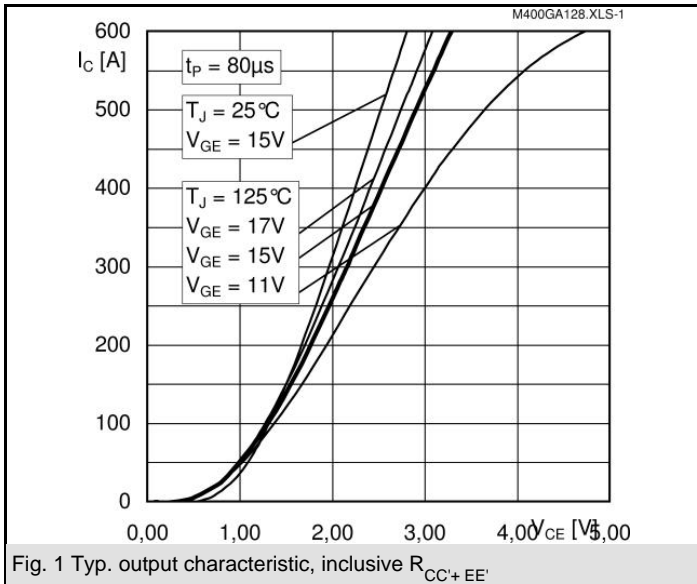


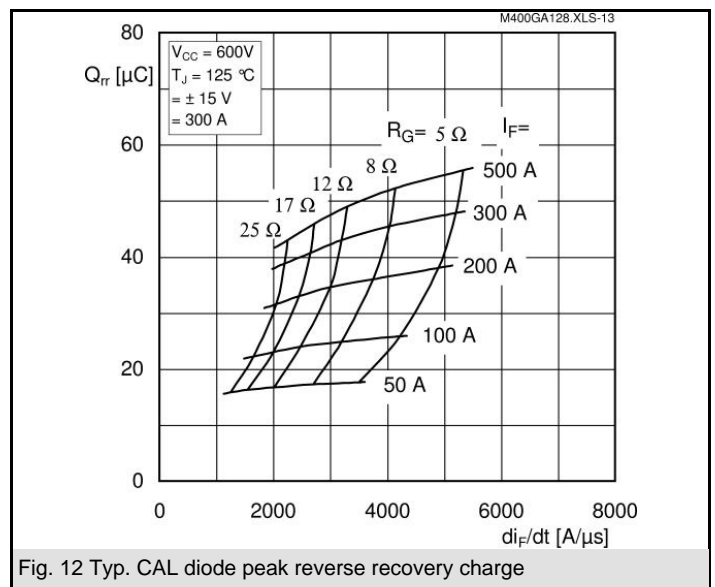
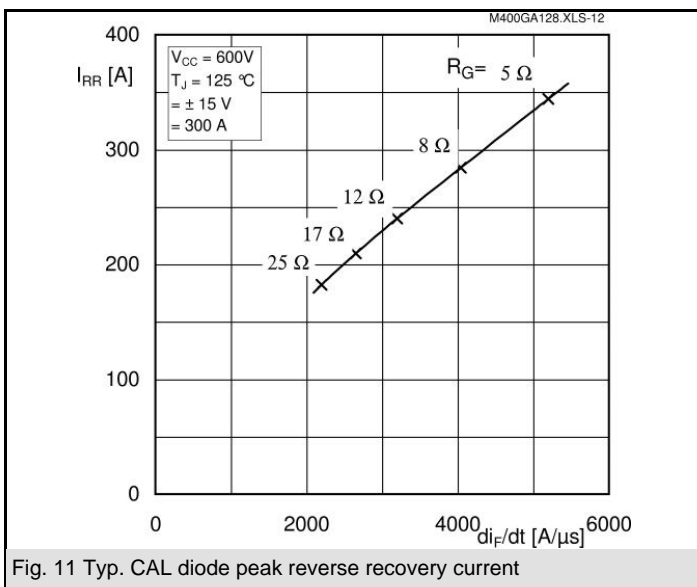
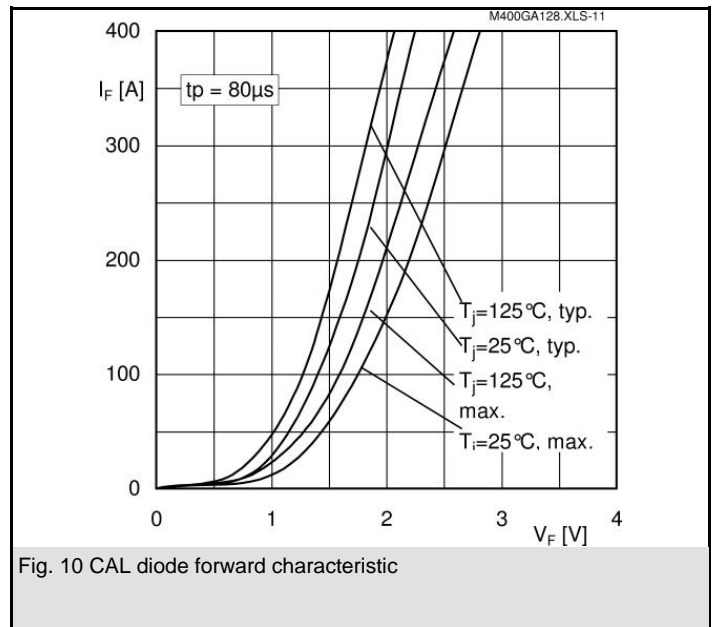
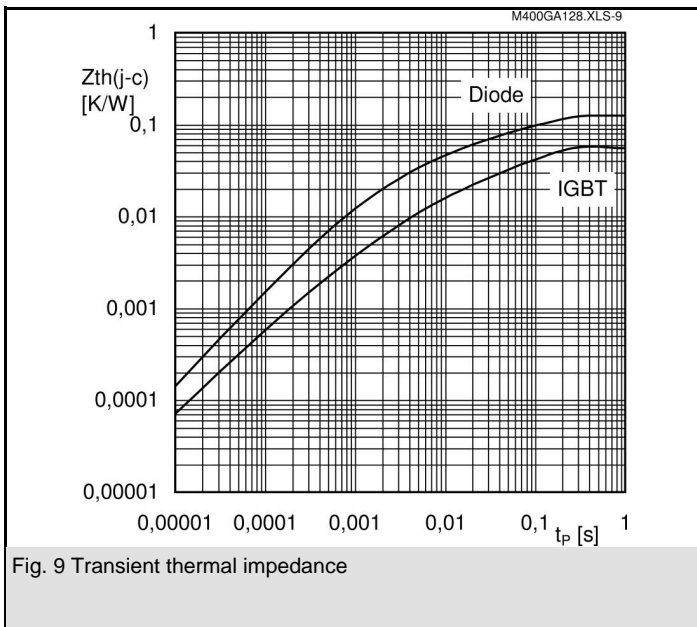
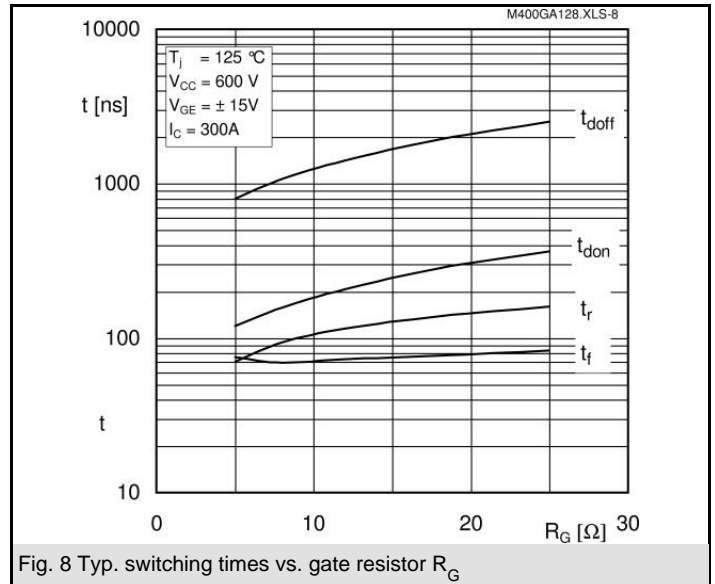
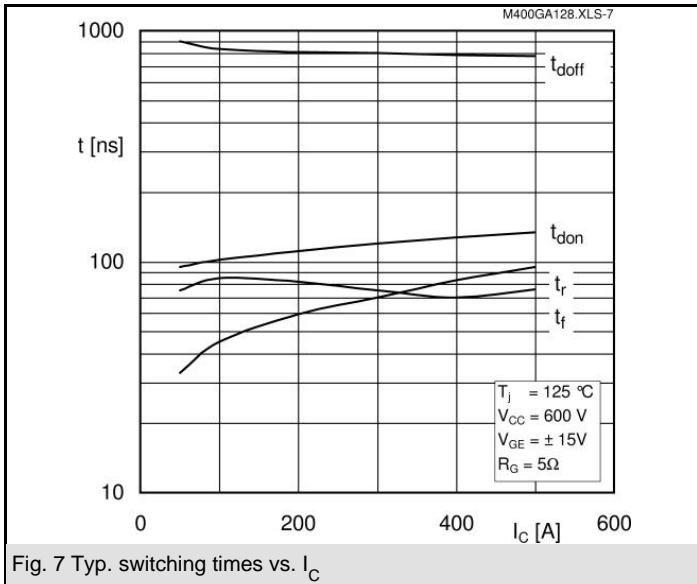
GA

Characteristics		min.	typ.	max.	Units
Symbol	Conditions				
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 300 \text{ A}; V_{GE} = 0 \text{ V}$		2	2,5	V
	$T_j = 25 \text{ °C}_{chiplev.}$				
	$T_j = 125 \text{ °C}_{chiplev.}$		1,8		V
V_{F0}	$T_j = 25 \text{ °C}$		1,1	1,2	V
r_F	$T_j = 25 \text{ °C}$		3	4,3	mΩ
I_{RRM}	$I_{Fnom} = 300 \text{ A}$		345		A
Q_{rr}	$di/dt = 5200 \text{ A}/\mu\text{s}$		48		μC
E_{rr}	$V_{GE} = -15 \text{ V}; V_{CC} = 600 \text{ V}$		20		mJ
$R_{th(j-c)D}$	per diode			0,125	K/W
Module					
L_{CE}			15	20	nH
$R_{CC'+EE'}$	res., terminal-chip	$T_{case} = 25 \text{ °C}$	0,18		mΩ
		$T_{case} = 125 \text{ °C}$	0,22		mΩ
$R_{th(c-s)}$	per module			0,038	K/W
M_s	to heat sink M6		3	5	Nm
M_t	to terminals M6 (M4)		2,5 (1,1)	5 (2)	Nm
w				330	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.



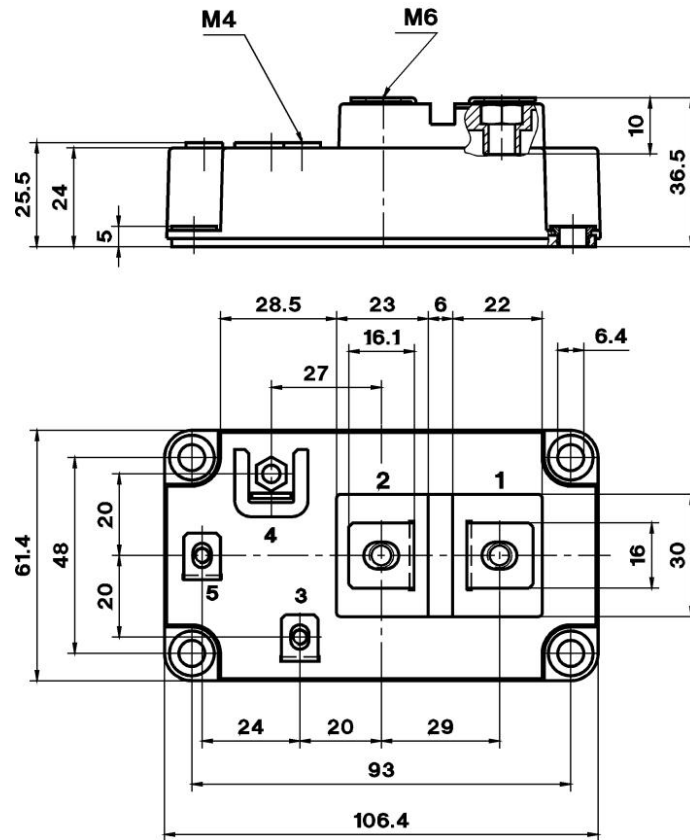


SKM 400GA128D

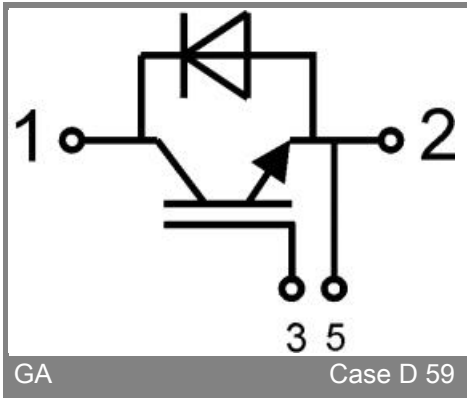
UL Recognized

CASED59

File 63 532



Case D 59



GA

Case D 59