

SKM 600GA125D



SEMITRANS™ 4

Ultra Fast IGBT Modules

SKM 600GA125D

Preliminary Data

Features

- NPT-IGBT with positive temperature coefficient of V_{CEsat}
- Short circuit self limiting to $6 \times I_C$
- Corresponds to standards: IEC 60721-3-3 (humidity) class 3K3/IEC 68T.1 climate 40/125/56

Typical Applications

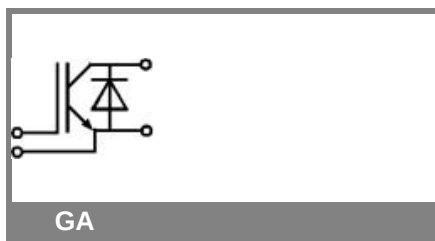
- Resonant inverters upto 100 kHz
- Inductive heating
- Electronic welders at $f_{SW} > 20$ kHz

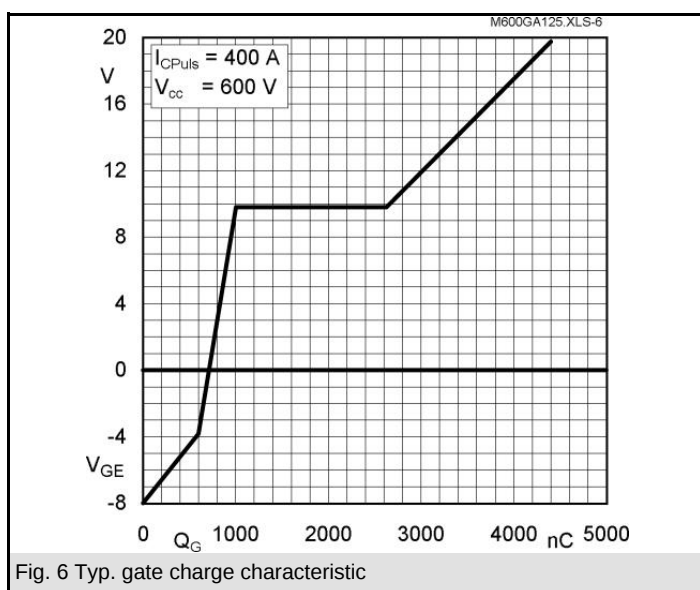
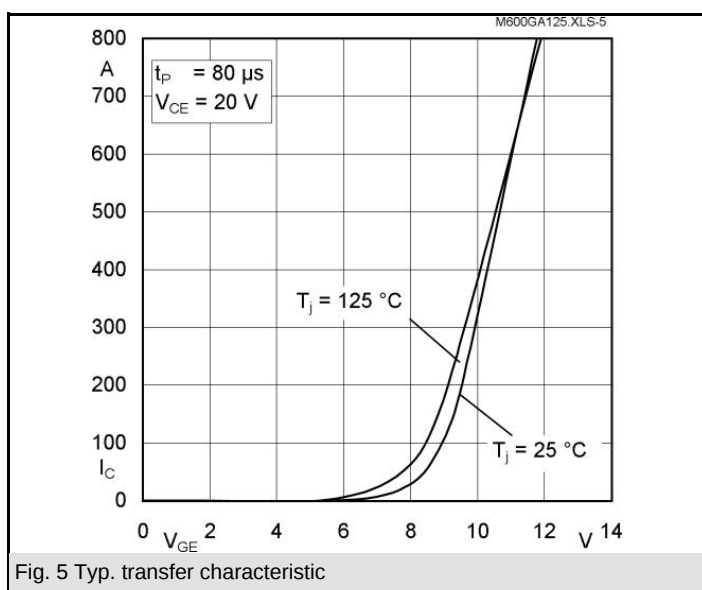
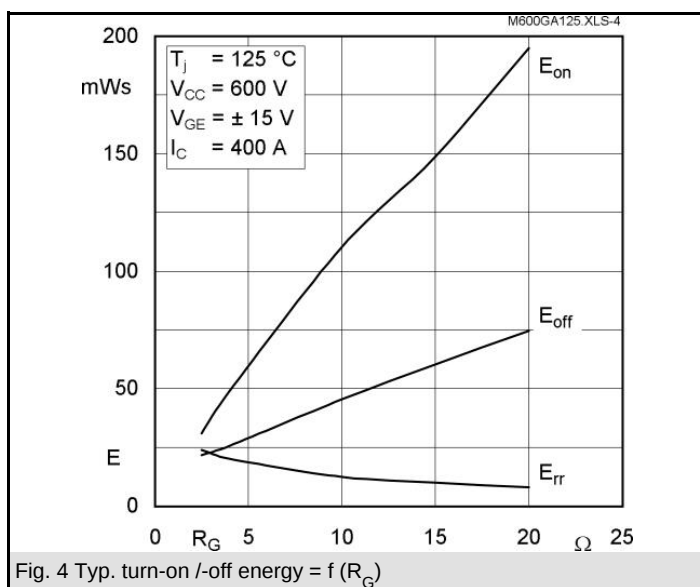
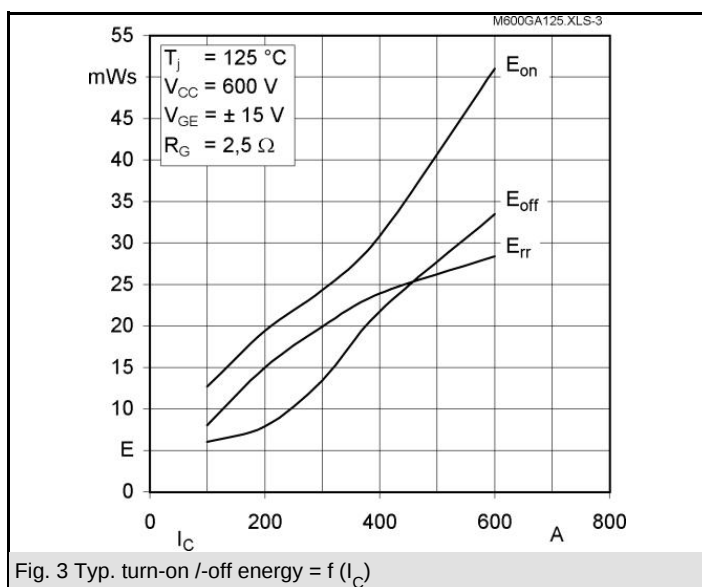
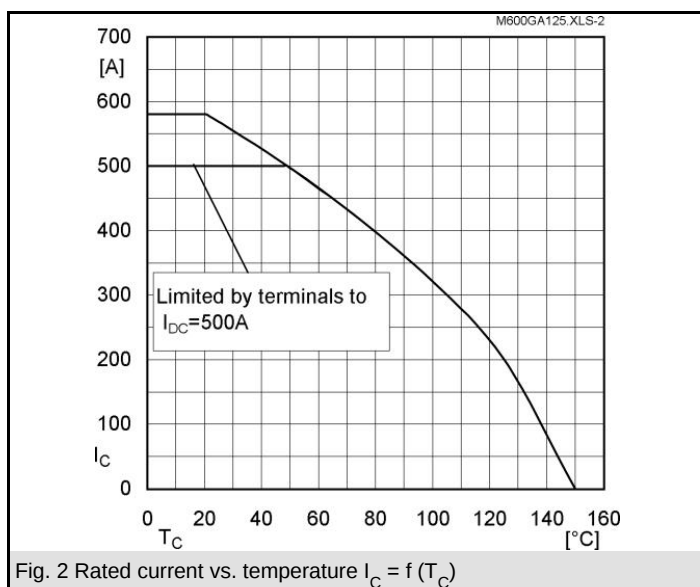
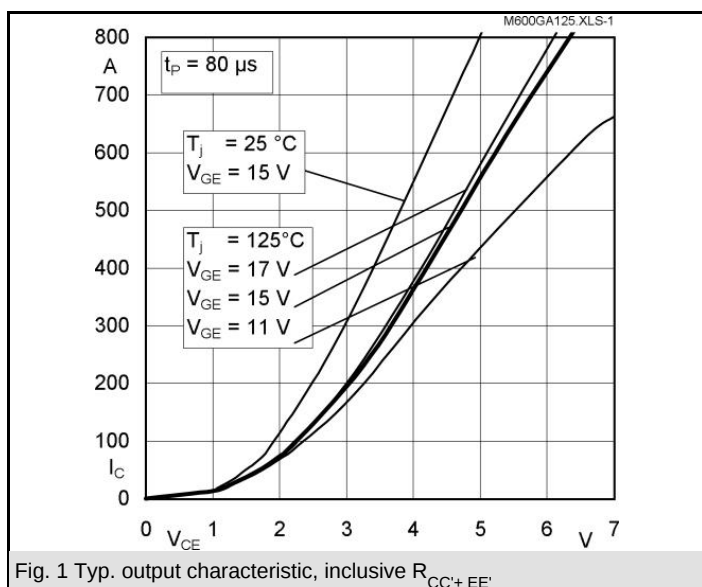
Remarks

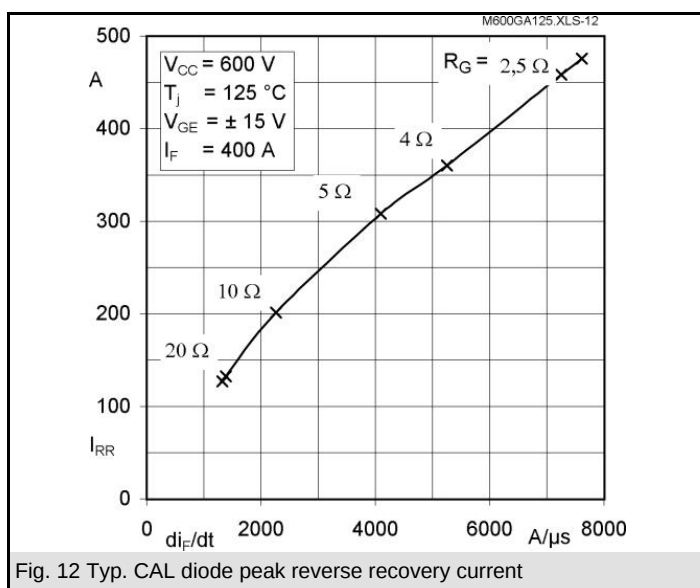
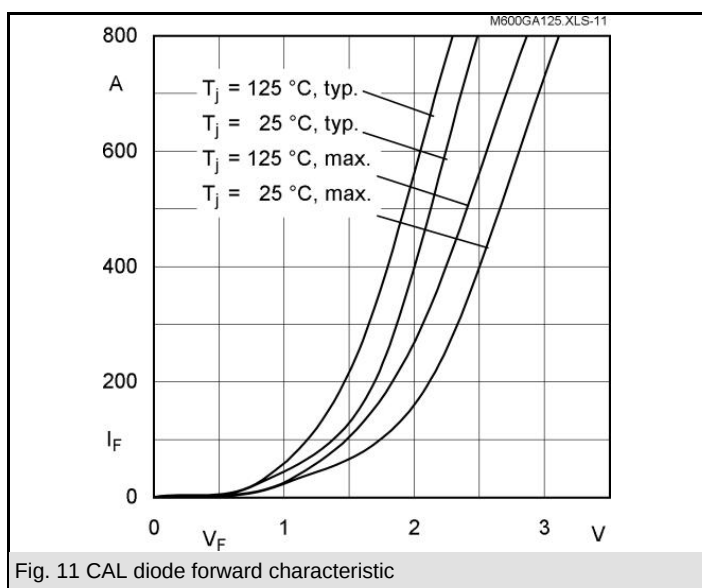
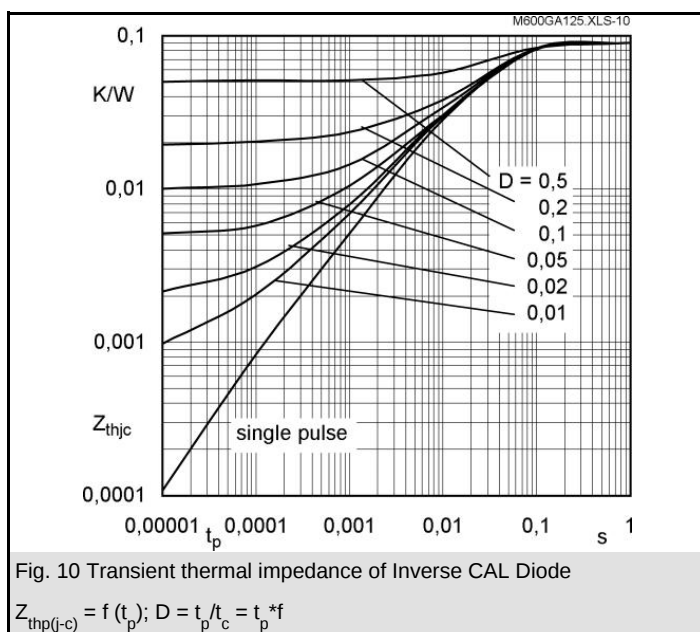
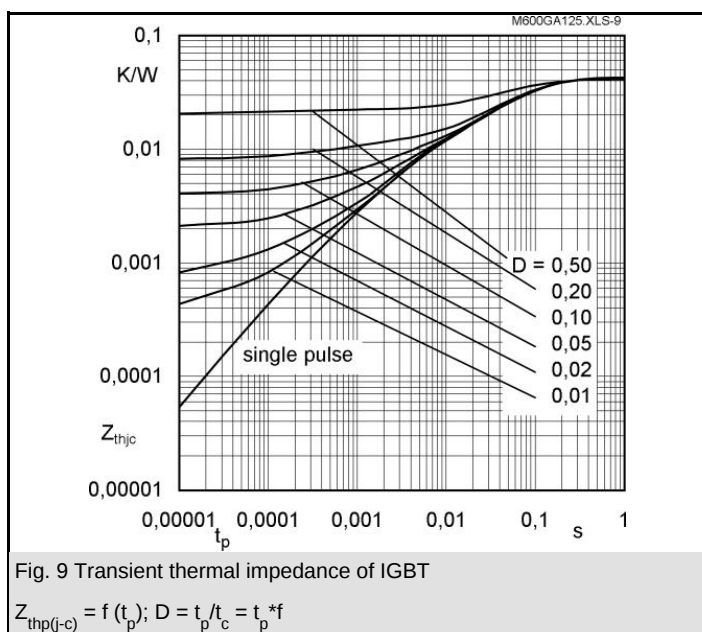
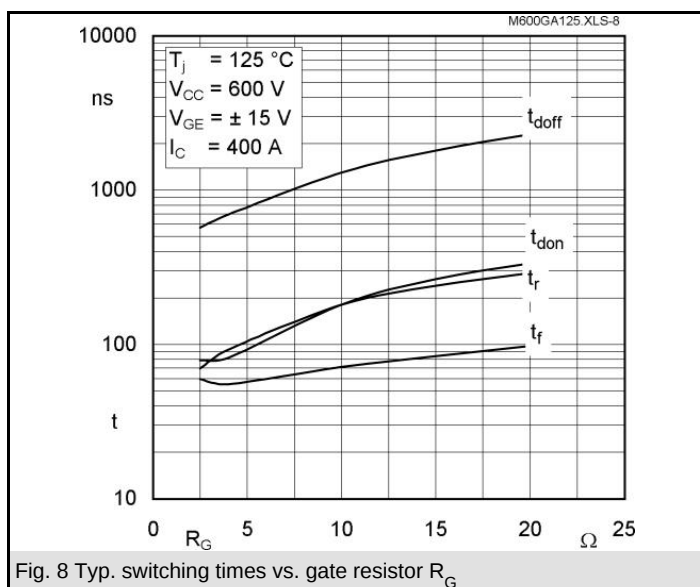
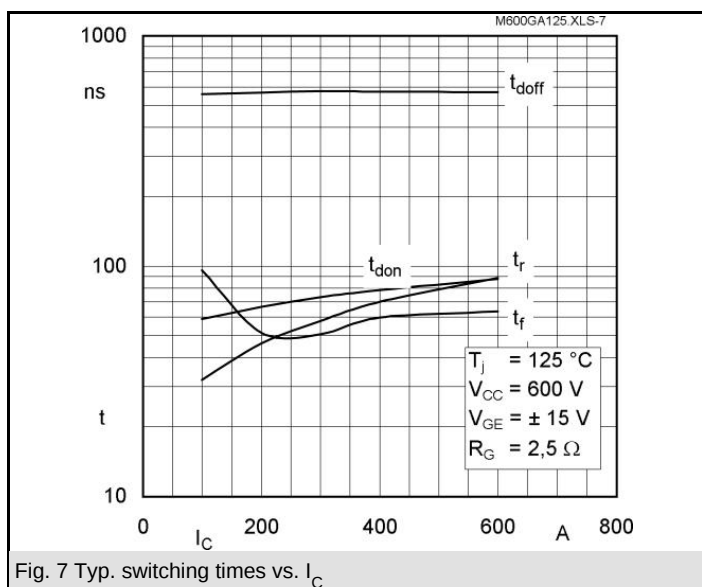
- $I_{DC} \leq 500A$ limited by terminals
- Take care of over-voltage caused by stray inductances.

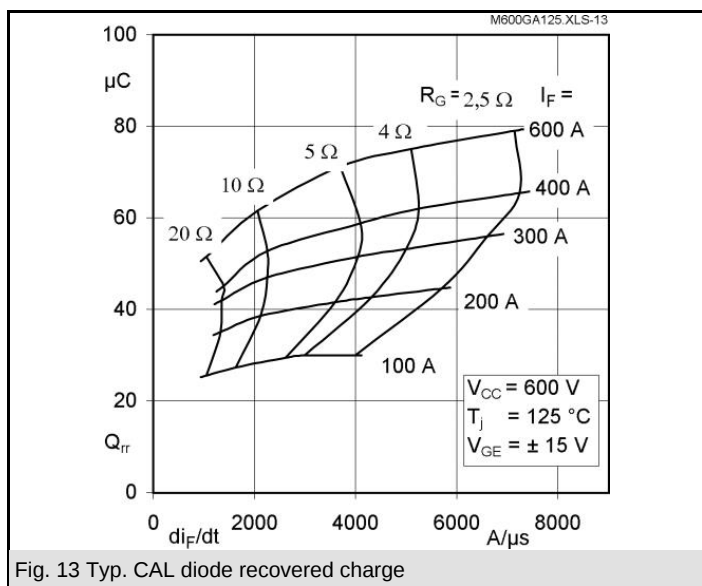
Absolute Maximum Ratings		$T_c = 25^\circ\text{C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1200	V
I_C	$T_c = 25$ (80) $^\circ\text{C}$	580 (400)	A
I_{CRM}	$t_p = 1$ ms	800	A
V_{GES}		± 20	V
T_{vj} (T_{stg})	$T_{OPERATION} \leq T_{stg}$	- 40 ... + 150 (125)	$^\circ\text{C}$
V_{isol}	AC, 1 min.	4000	V
Inverse diode			
I_F	$T_c = 25$ (80) $^\circ\text{C}$	500 (350)	A
I_{FRM}	$t_p = 1$ ms	800	A
I_{FSM}	$t_p = 10$ ms; sin.; $T_j = 150^\circ\text{C}$	3600	A

Characteristics		$T_c = 25^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 16$ mA	4,5	5,5	6,5	V
I_{CES}	$V_{GE} = 0$, $V_{CE} = V_{CES}$, $T_j = 25$ (125) $^\circ\text{C}$		0,15	0,45	mA
$V_{CE(TO)}$	$T_j = 25$ (125) $^\circ\text{C}$		1,5 (1,7)	1,75	V
r_{CE}	$V_{GE} = 15$ V, $T_j = 25$ (125) $^\circ\text{C}$		4,5 (6)	5,3	m Ω
$V_{CE(sat)}$	$I_{Cnom} = 400$ A, $V_{GE} = 15$ V, chip level		3,3 (4)	3,85	V
C_{ies}	under following conditions		36		nF
C_{oes}	$V_{GE} = 0$, $V_{CE} = 25$ V, $f = 1$ MHz		3,8		nF
C_{res}			3,5		nF
L_{CE}				20	nH
$R_{CC'+EE'}$	res., terminal-chip $T_c = 25$ (125) $^\circ\text{C}$		0,18 (0,22)		m Ω
$t_{d(on)}$	$V_{CC} = 600$ V, $I_{Cnom} = 400$ A		80		ns
t_r	$R_{Gon} = R_{Goff} = 2,5 \Omega$, $T_j = 125^\circ\text{C}$		70		ns
$t_{d(off)}$	$V_{GE} = \pm 15$ V		570		ns
t_f			60		ns
E_{on} (E_{off})			30 (22)		mJ
Inverse diode					
$V_F = V_{EC}$	$I_{Fnom} = 400$ A; $V_{GE} = 0$ V; $T_j = 25$ (125) $^\circ\text{C}$		2 (1,8)	2,5	V
$V_{(TO)}$	$T_j = 25$ (125) $^\circ\text{C}$			(1,2)	V
r_T	$T_j = 25$ (125) $^\circ\text{C}$			(3)	m Ω
I_{RRM}	$I_{Fnom} = 400$ A; $T_j = 125$ () $^\circ\text{C}$		460		A
Q_{rr}	$di/dt = 7200$ A/ μs		65		μC
E_{rr}	$V_{GE} = 0$ V		27		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	2,5		5	Nm
w				330	g





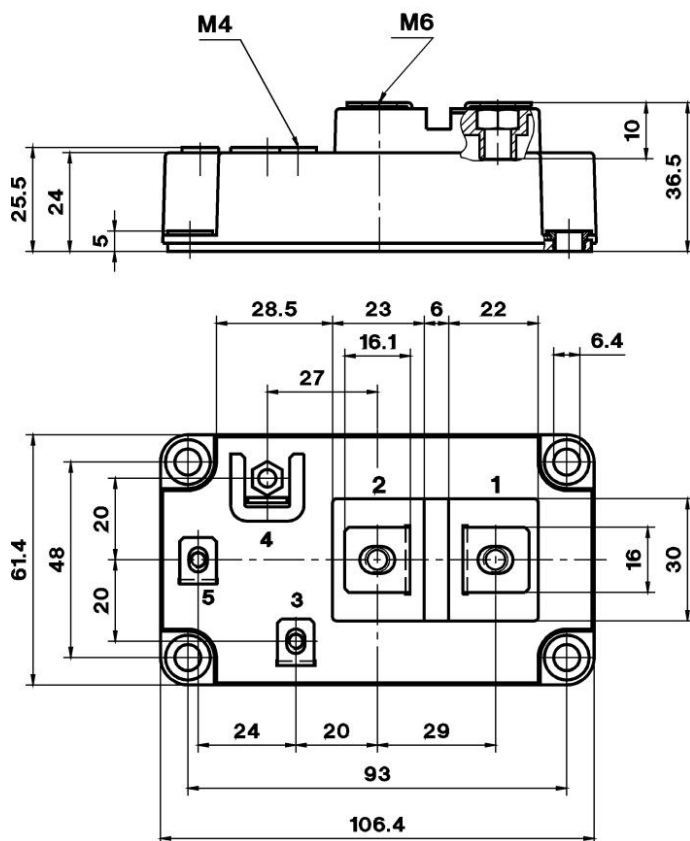




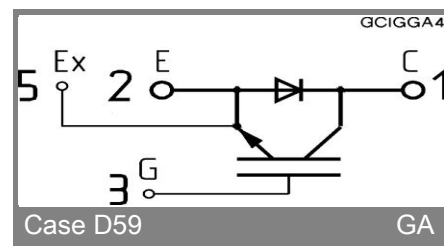
UL Recognized
File no. E 63 532

Dimensions in mm

CASED59



Case D 59



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.