

SKM 100GB123D



SEMITRANS™ 2

IGBT Modules

SKM 100GB123D

SKM 100GAL123D

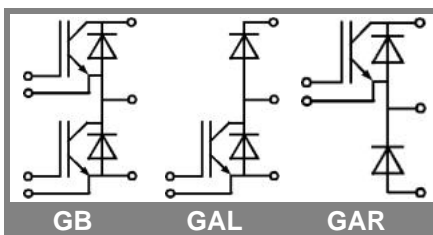
SKM 100GAR123D

Features

- MOS input (voltage controlled)
- N channel, Homogeneous Si
- Low inductance case
- Very low tail current with low temperature dependence
- High short circuit capability, self limiting to $6 \times I_{cnom}$
- Latch-up free
- Fast & soft inverse CAL diodes
- Isolated copper baseplate using DCB Direct Copper Bonding Technology
- Large clearance (10 mm) and creepage distances (20 mm)

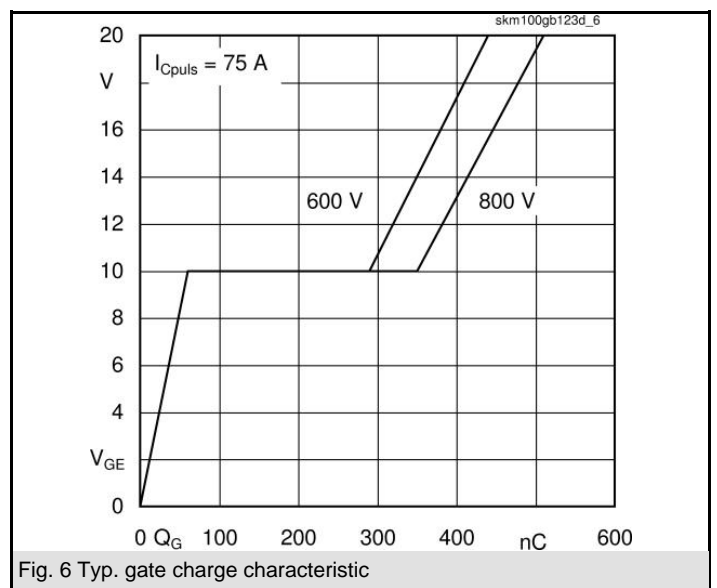
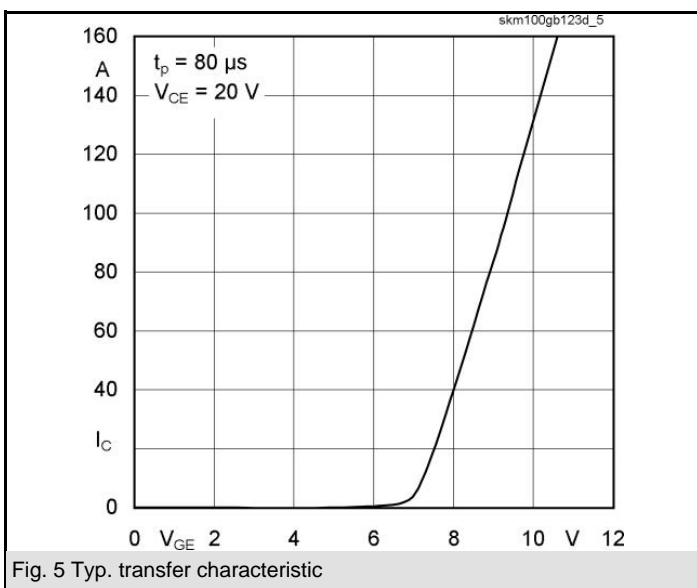
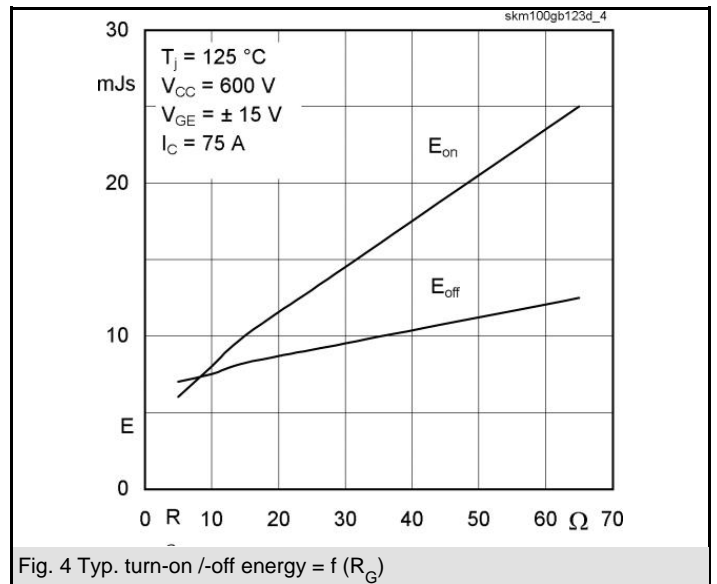
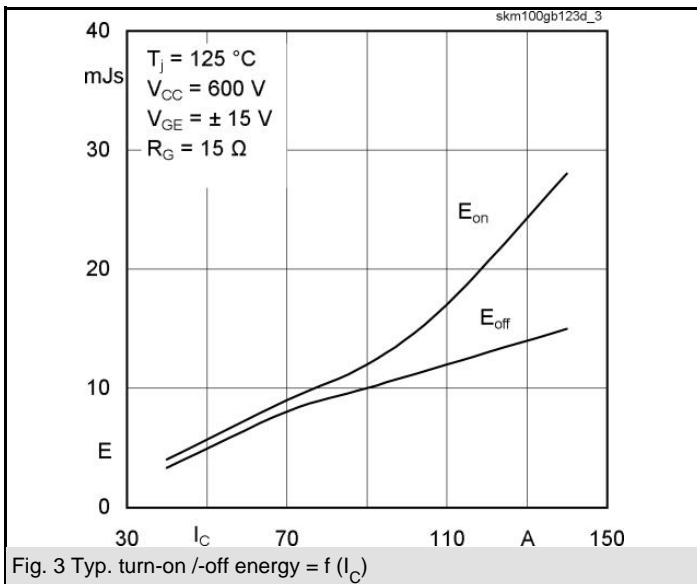
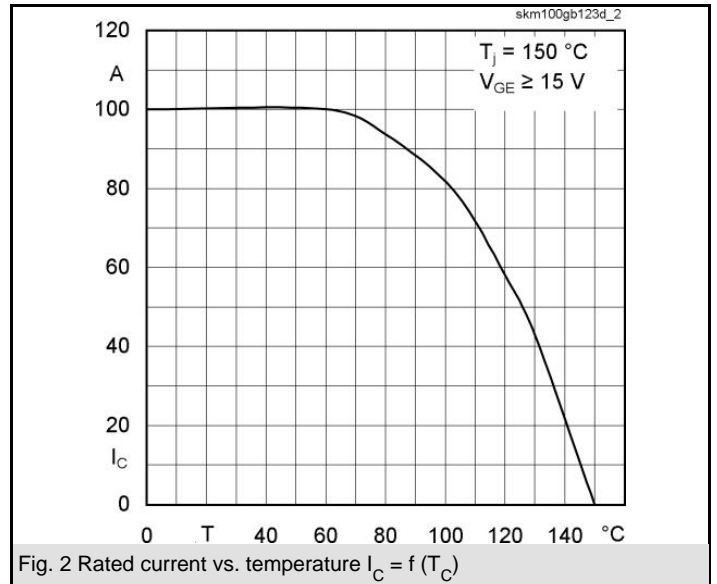
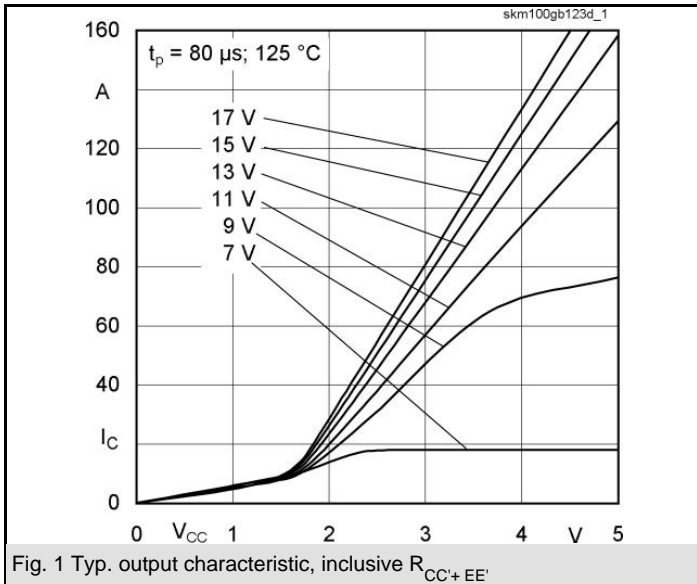
Typical Applications

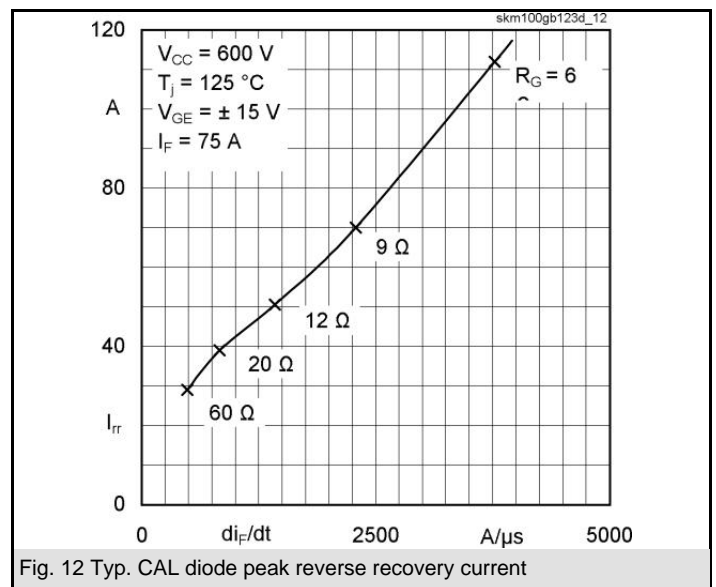
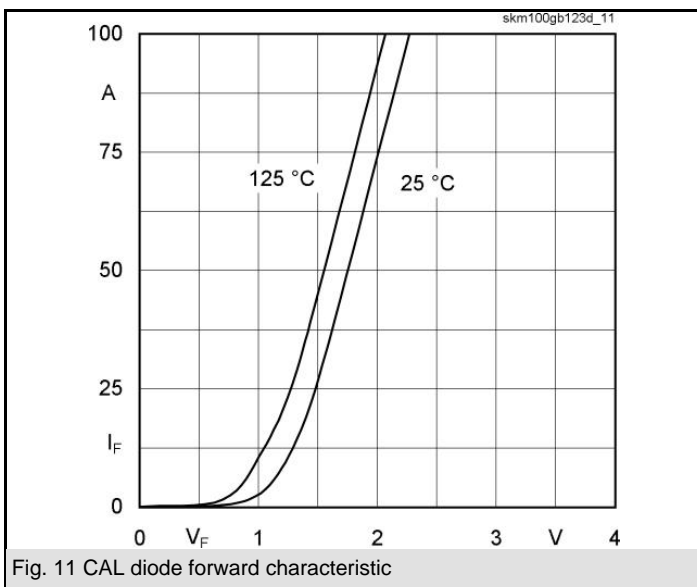
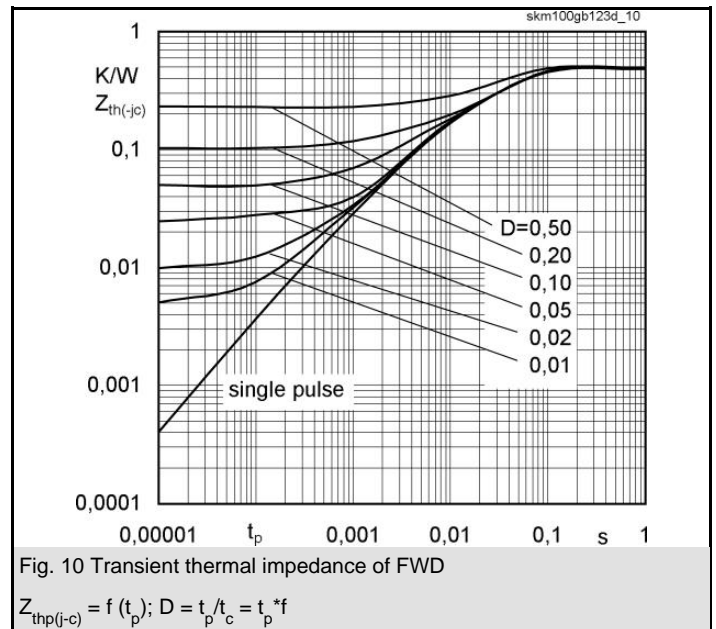
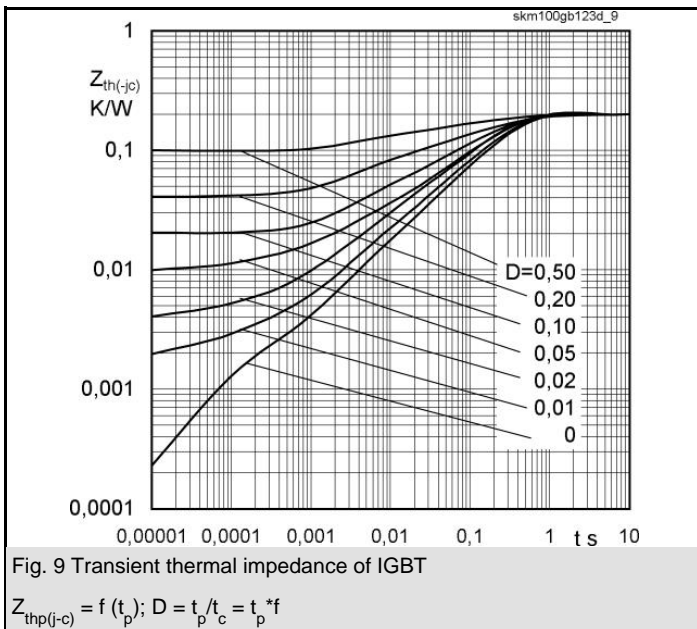
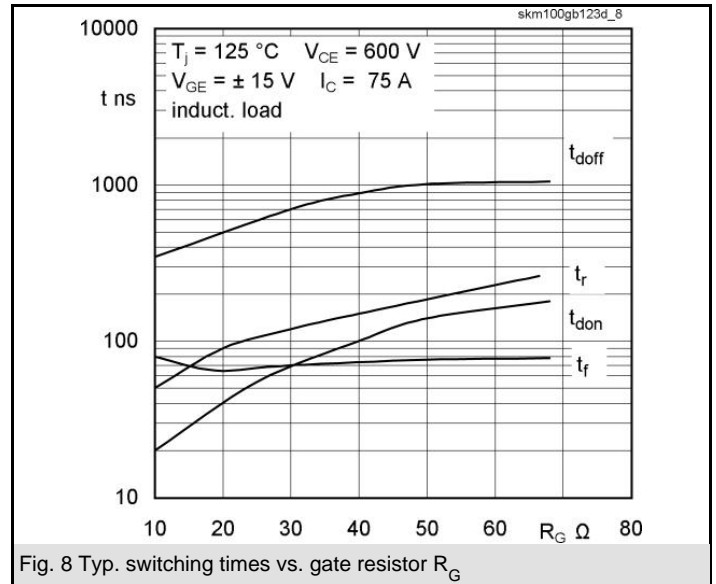
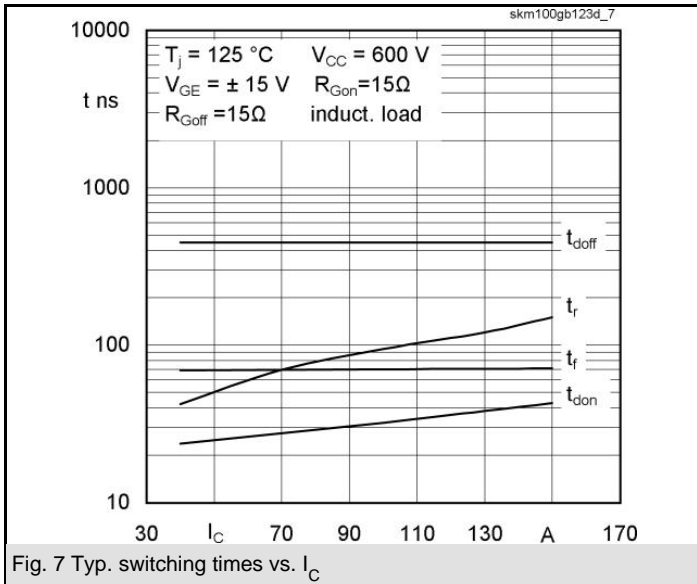
- Switching (not for linear use)



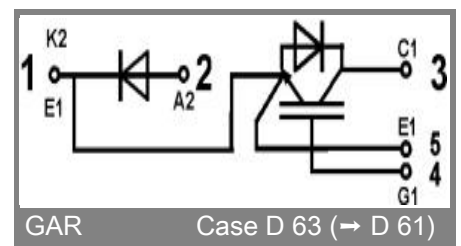
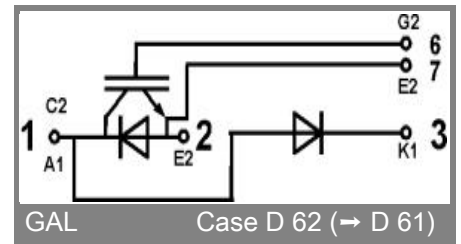
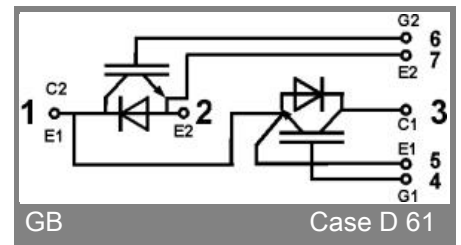
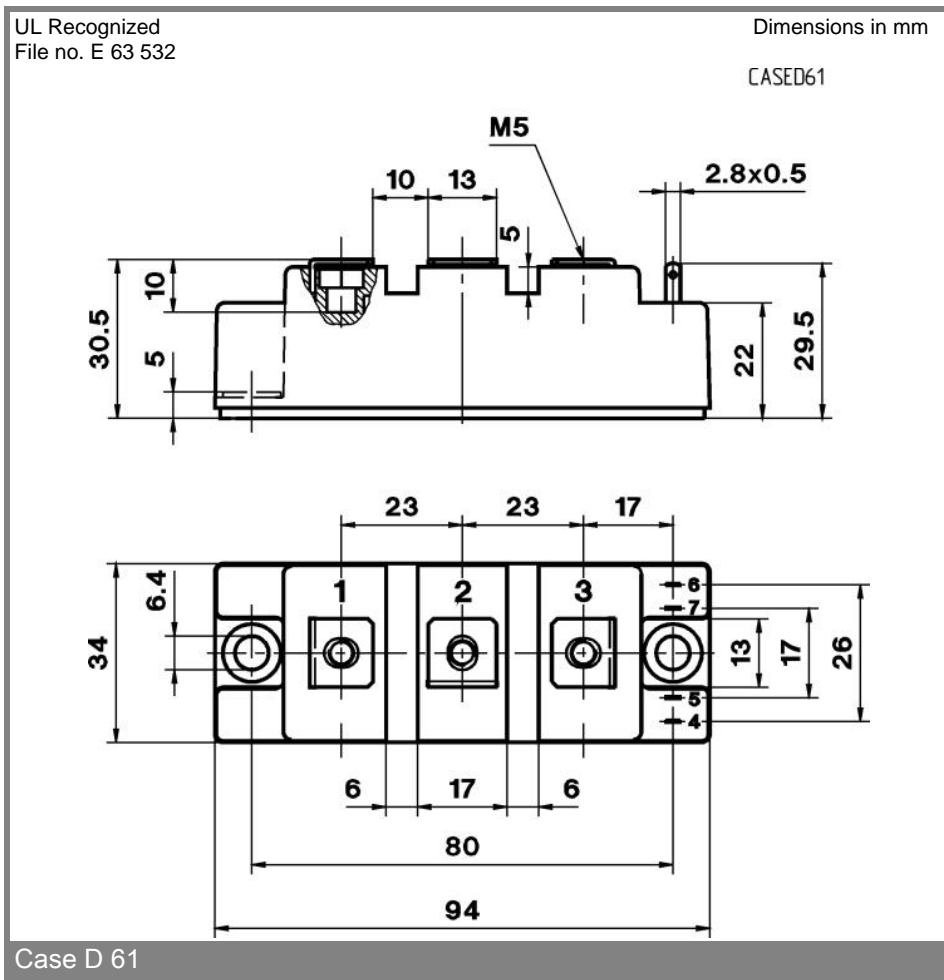
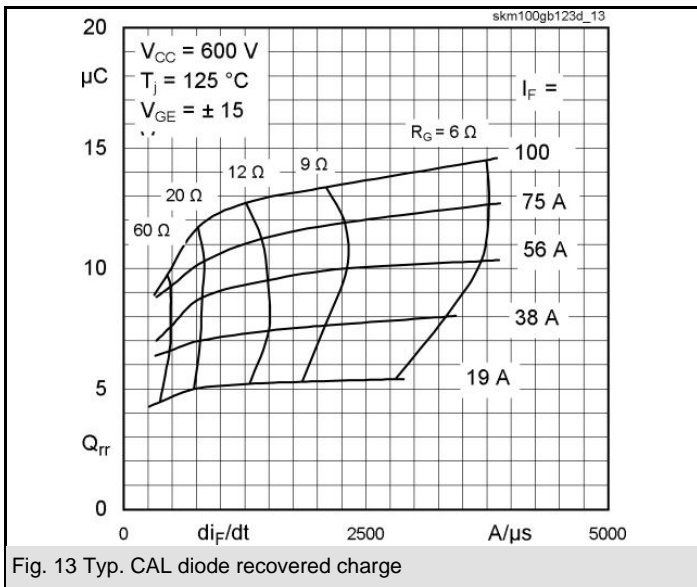
Absolute Maximum Ratings		$T_c = 25\text{ }^\circ\text{C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1200	V
I_C	$T_c = 25\text{ (80) }^\circ\text{C}$	100 (90)	A
I_{CRM}	$T_c = 25\text{ (80) }^\circ\text{C}$, $t_p = 1\text{ ms}$	200 (180)	A
V_{GES}		± 20	V
T_{vj} , (T_{stg})	$T_{OPERATION} \leq T_{stg}$	- 40 ... + 150 (125)	$^\circ\text{C}$
V_{isol}	AC, 1 min.	2500	V
Inverse diode			
I_F	$T_c = 25\text{ (80) }^\circ\text{C}$	95 (65)	A
I_{FRM}	$T_c = 25\text{ (80) }^\circ\text{C}$, $t_p = 1\text{ ms}$	200 (180)	A
I_{FSM}	$t_p = 10\text{ ms}$; sin.; $T_j = 150\text{ }^\circ\text{C}$	720	A
Freewheeling diode			
I_F	$T_c = 25\text{ (80) }^\circ\text{C}$	130 (90)	A
I_{FRM}	$T_c = 25\text{ (80) }^\circ\text{C}$, $t_p = 1\text{ ms}$	200 (180)	A
I_{FSM}	$t_p = 10\text{ ms}$; sin.; $T_j = 150\text{ }^\circ\text{C}$	1100	A

Characteristics		$T_c = 25\text{ }^\circ\text{C}$, unless otherwise specified			Units
Symbol	Conditions	min.	typ.	max.	
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 2\text{ mA}$	4,5	5,5	6,5	V
I_{CES}	$V_{GE} = 0$, $V_{CE} = V_{CES}$, $T_j = 25\text{ (125) }^\circ\text{C}$		0,1	0,3	mA
$V_{CE(TO)}$	$T_j = 25\text{ (125) }^\circ\text{C}$		1,4 (1,6)	1,6 (1,8)	V
r_{CE}	$V_{GE} = 15\text{ V}$, $T_j = 25\text{ (125) }^\circ\text{C}$		14,6 (20)	18,6 (25,3)	m Ω
$V_{CE(sat)}$	$I_C = 75\text{ A}$, $V_{GE} = 15\text{ V}$, chip level		2,5 (3,1)	3 (3,7)	V
C_{res}	under following conditions		5	6,6	nF
C_{oes}	$V_{GE} = 0$, $V_{CE} = 25\text{ V}$, $f = 1\text{ MHz}$		0,72	0,9	nF
C_{res}			0,38	0,5	nF
L_{CE}				30	nH
$R_{CC'+EE'}$	res., terminal-chip $T_c = 25\text{ (125) }^\circ\text{C}$		0,75 (1)		m Ω
$t_{d(on)}$	$V_{CC} = 600\text{ V}$, $I_C = 75\text{ A}$		30	60	ns
t_r	$R_{Gon} = R_{Goff} = 15\text{ }^\circ\Omega$, $T_j = 125\text{ }^\circ\text{C}$		70	140	ns
$t_{d(off)}$	$V_{GE} = \pm 15\text{ V}$		450	600	ns
t_f			70	90	ns
E_{on} (E_{off})			10 (8)		mJ
Inverse diode					
$V_F = V_{EC}$	$I_F = 75\text{ A}$; $V_{GE} = 0\text{ V}$; $T_j = 25\text{ (125) }^\circ\text{C}$		2 (1,8)	2,5	V
$V_{(TO)}$	$T_j = 125\text{ () }^\circ\text{C}$			1,2	V
r_T	$T_j = 125\text{ () }^\circ\text{C}$		12	15	m Ω
I_{RRM}	$I_F = 75\text{ A}$; $T_j = 25\text{ (125) }^\circ\text{C}$		27 (40)		A
Q_{rr}	$di/dt = 800\text{ A}/\mu\text{s}$		3 (10)		μC
E_{rr}	$V_{GE} = V$				mJ
FWD					
$V_F = V_{EC}$	$I_F = 75\text{ A}$; $V_{GE} = 0\text{ V}$, $T_j = 25\text{ (125) }^\circ\text{C}$		1,85 (1,6)	2,2	V
$V_{(TO)}$	$T_j = 125\text{ () }^\circ\text{C}$			1,2	V
r_T	$T_j = 125\text{ () }^\circ\text{C}$		9	11	m Ω
I_{RRM}	$I_F = 75\text{ A}$; $T_j = 25\text{ (125) }^\circ\text{C}$		30 (45)		A
Q_{rr}	$di/dt = A/\mu\text{s}$		3,5 (11)		μC
E_{rr}	$V_{GE} = V$				mJ
Thermal characteristics					
$R_{th(j-c)}$	per IGBT			0,18	K/W
$R_{th(j-c)D}$	per Inverse Diode			0,5	K/W
$R_{th(j-c)FD}$	per FWD			0,36	K/W
$R_{th(c-s)}$	per module			0,05	K/W
Mechanical data					
M_s	to heatsink M6	3		5	Nm
M_t	to terminals M5	2,5		5	Nm
w				160	g





SKM 100GB123D



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.