



SEMITRANS™ 2

IGBT Modules

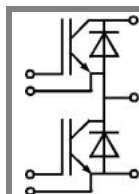
SKM 100GB173D

Features

- N channel, Homogeneous Si
- 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
- Large clearance (10 mm) and creepage distances (20 mm).

Typical Applications

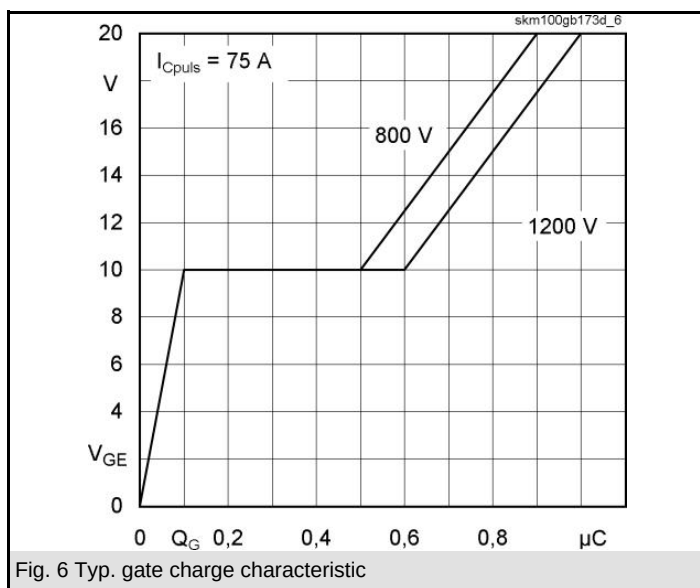
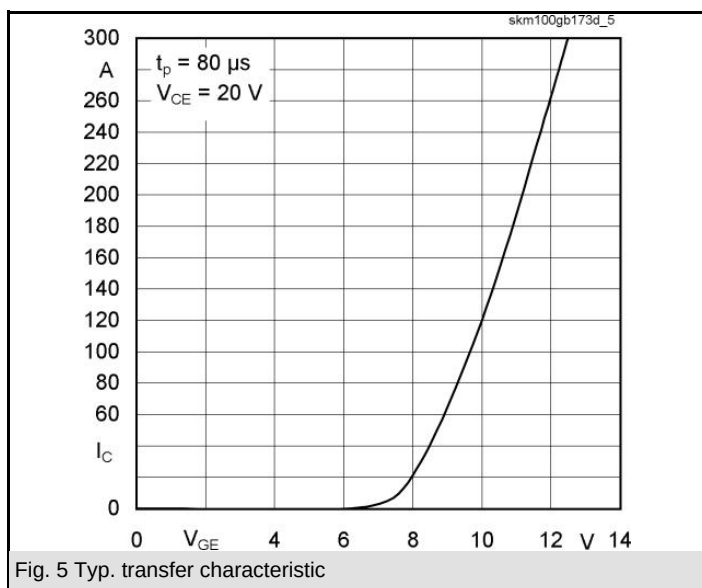
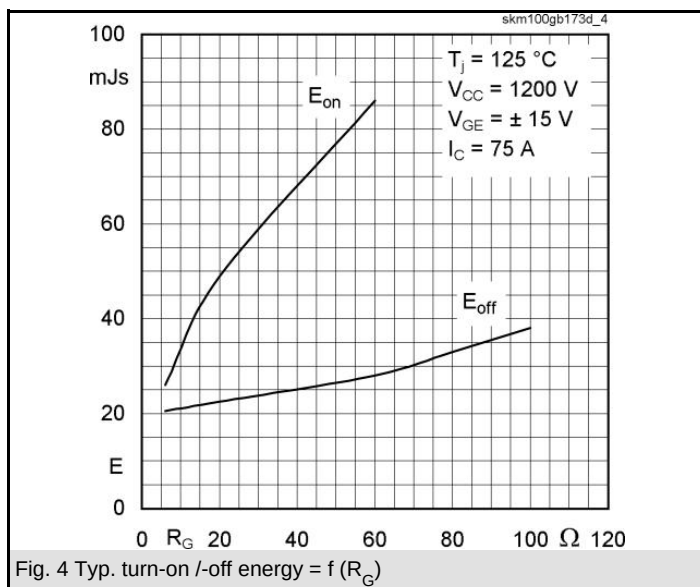
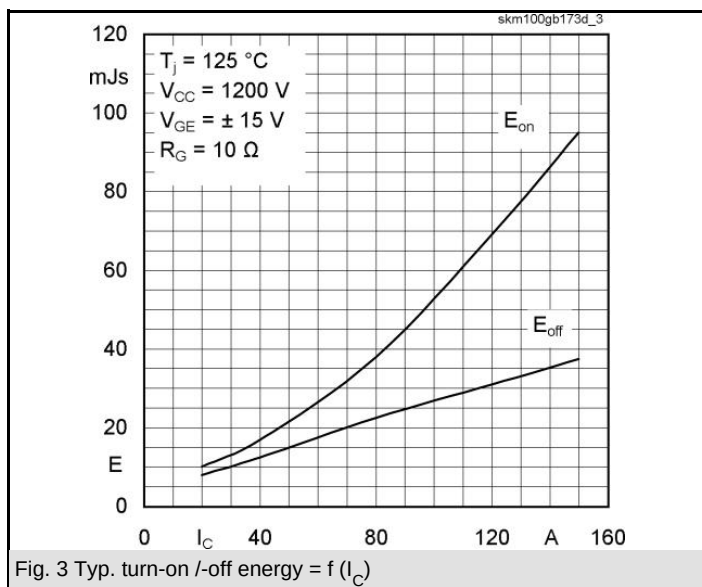
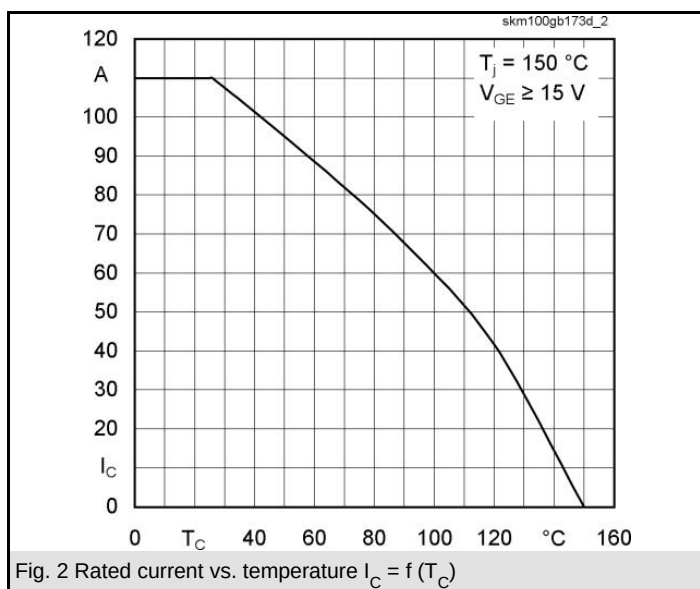
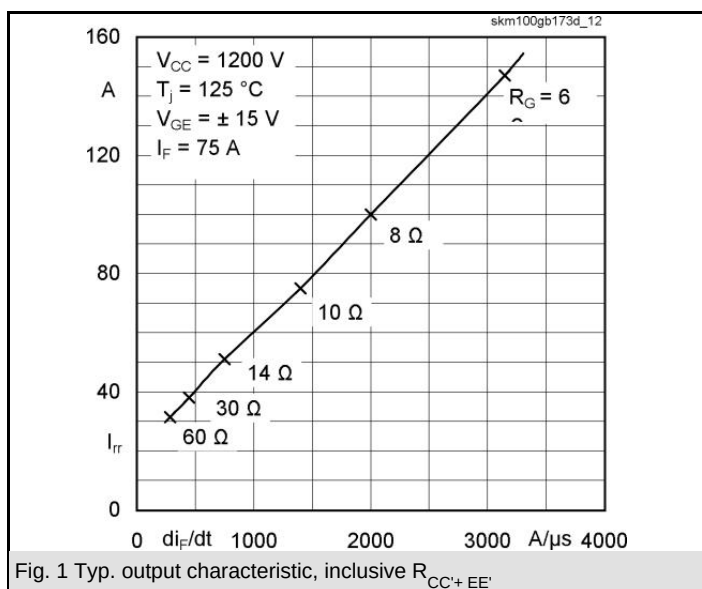
- AC inverter drives on mains 575 - 750 V_{AC}
- DC bus voltage 750 -1200 V_{DC}
- Public transport (auxiliary syst.)
- Switching (not for linear use)

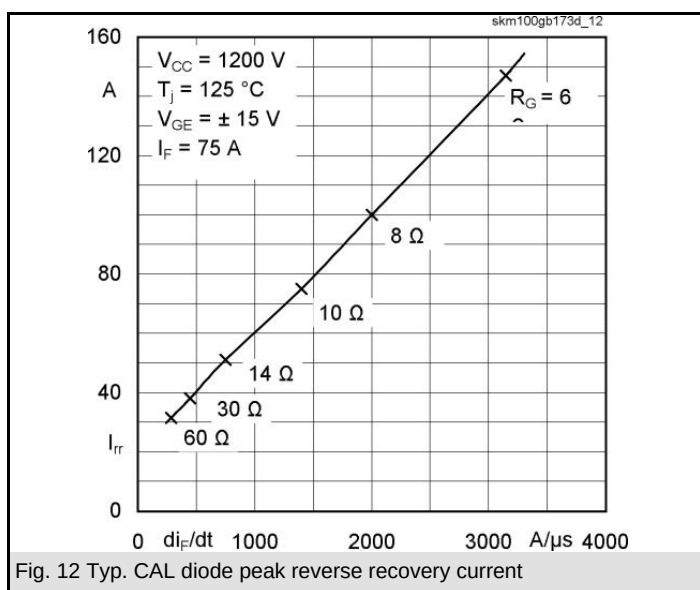
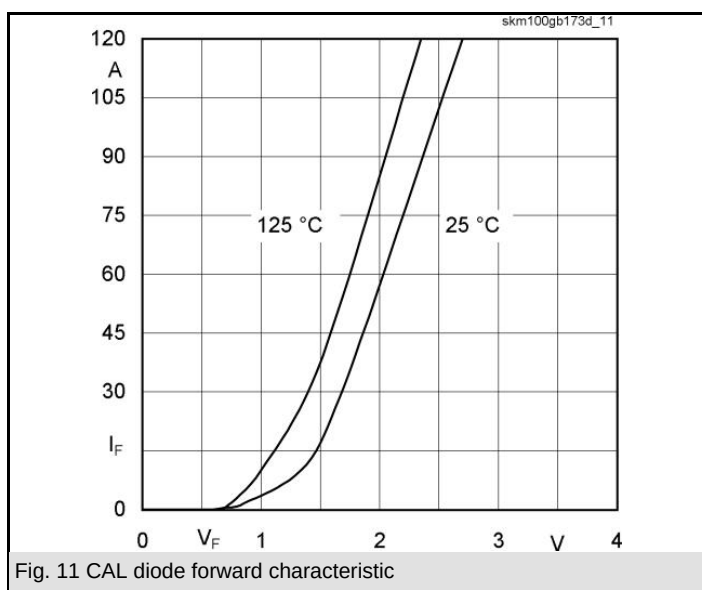
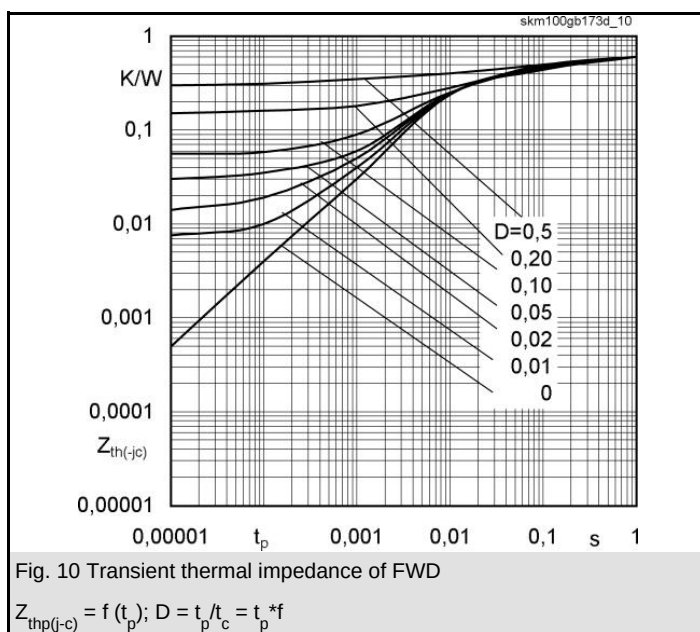
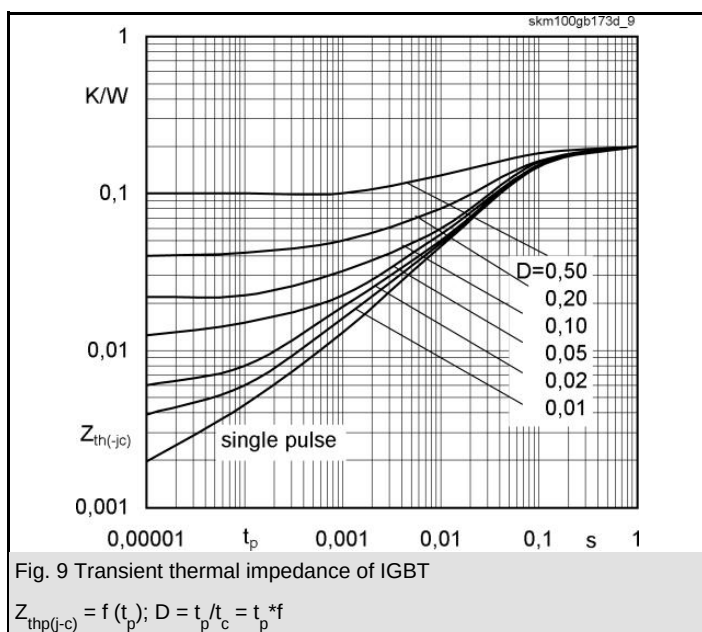
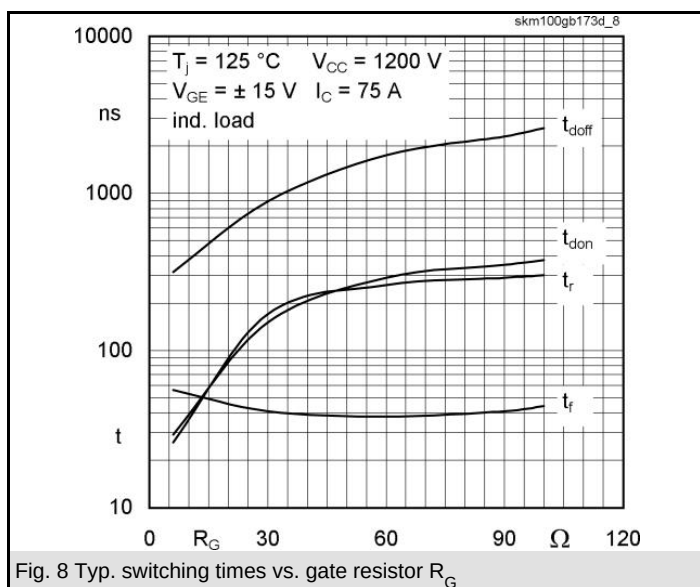
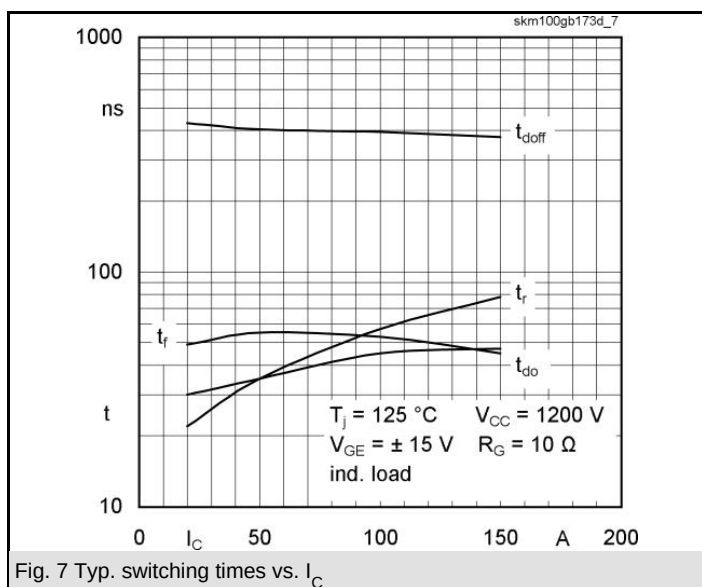


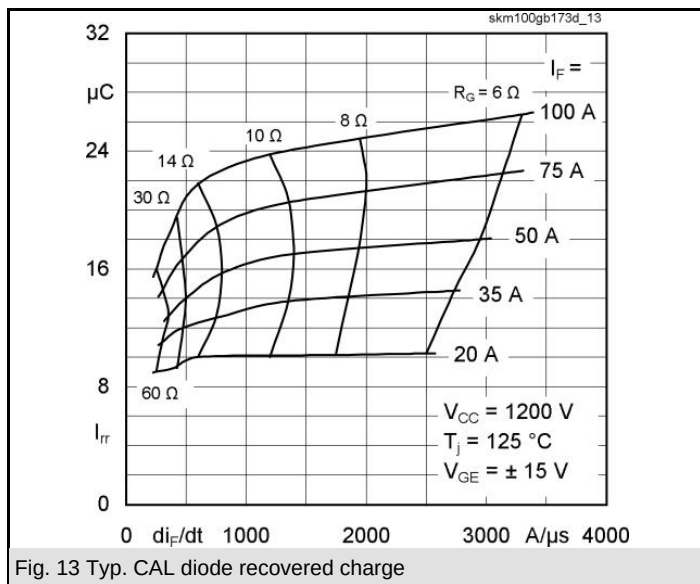
GB

Absolute Maximum Ratings		$T_c = 25\text{ °C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1700	V
I_C	$T_c = 25\text{ (80) °C}$	110 (75)	A
I_{CRM}	$t_p = 1\text{ ms}$	150	A
V_{GES}		± 20	V
T_{vj} (T_{stg})	$T_{OPERATION} \leq T_{stg}$	- 40 ... + 150 (125)	°C
V_{isol}	AC, 1 min.	4000	V
Inverse diode			
I_F	$T_c = 25\text{ (80) °C}$	80 (50)	A
I_{FRM}	$t_p = 1\text{ ms}$	150	A
I_{FSM}	$t_p = 10\text{ ms}$; sin.; $T_j = 150\text{ °C}$	720	A

Characteristics		$T_c = 25\text{ °C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 6\text{ mA}$	4,8	5,5	6,2	V
I_{CES}	$V_{GE} = 0$, $V_{CE} = V_{CES}$, $T_j = 25\text{ (125) °C}$		0,1	0,3	mA
$V_{CE(TO)}$	$T_j = 25\text{ (125) °C}$		1,65 (1,9)	1,9 (2,15)	V
r_{CE}	$V_{GE} = 15\text{ V}$, $T_j = 25\text{ (125) °C}$		23,3 (33,3)	26,6 (38)	mΩ
$V_{CE(sat)}$	$I_{Cnom} = 75\text{ A}$, $V_{GE} = 15\text{ V}$, chip level		3,4 (4,4)	3,9 (5)	V
C_{ies}	under following conditions		11		nF
C_{oes}	$V_{GE} = 0$, $V_{CE} = 25\text{ V}$, $f = 1\text{ MHz}$		1		nF
C_{res}			0,28		nF
L_{CE}				30	nH
$R_{CC'+EE'}$	res., terminal-chip $T_c = 0,75\text{ (1) °C}$				mΩ
$t_{d(on)}$	$V_{CC} = 1200\text{ V}$, $I_{Cnom} = 75\text{ A}$		40		ns
t_r	$R_{Gon} = R_{Goff} = 10\text{ Ω}$, $T_j = 125\text{ °C}$		45		ns
$t_{d(off)}$	$V_{GE} = \pm 15\text{ V}$		400		ns
t_f			56		ns
$E_{on} (E_{off})$			35 (21)		mJ
Inverse diode					
$V_F = V_{EC}$	$I_{Fnom} = 75\text{ A}$; $V_{GE} = 0\text{ V}$; $T_j = 25\text{ (125) °C}$		2,2 (2)	2,7 (2,3)	V
$V_{(TO)}$	$T_j = 125\text{ () °C}$		1,3	1,5	V
r_T	$T_j = 125\text{ () °C}$		9	13	mΩ
I_{RRM}	$I_{Fnom} = 75\text{ A}$; $T_j = 25\text{ (125) °C}$		38 (51)		A
Q_{rr}	$di/dt = \text{A}/\mu\text{s}$		8 (19)		μC
E_{rr}	$V_{GE} = V$				mJ
FWD					
$V_F = V_{EC}$	$I_F = 100\text{ A}$; $V_{GE} = V$, $T_j = 25\text{ (125) °C}$		2,2 (1,9)	2,7 (2,4)	V
$V_{(TO)}$	$T_j = 125\text{ () °C}$		1,2	1,5	V
r_T	$T_j = 125\text{ () °C}$		7	9	mΩ
I_{RRM}	$I_F = 100\text{ A}$; $T_j = 25\text{ (125) °C}$				A
Q_{rr}	$di/dt = \text{A}/\mu\text{s}$		10 (27)		μC
E_{rr}	$V_{GE} = V$				mJ
Thermal characteristics					
$R_{th(j-c)}$	per IGBT			0,2	K/W
$R_{th(j-c)D}$	per Inverse Diode			0,63	K/W
$R_{th(j-c)FD}$	per FWD			0,4	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



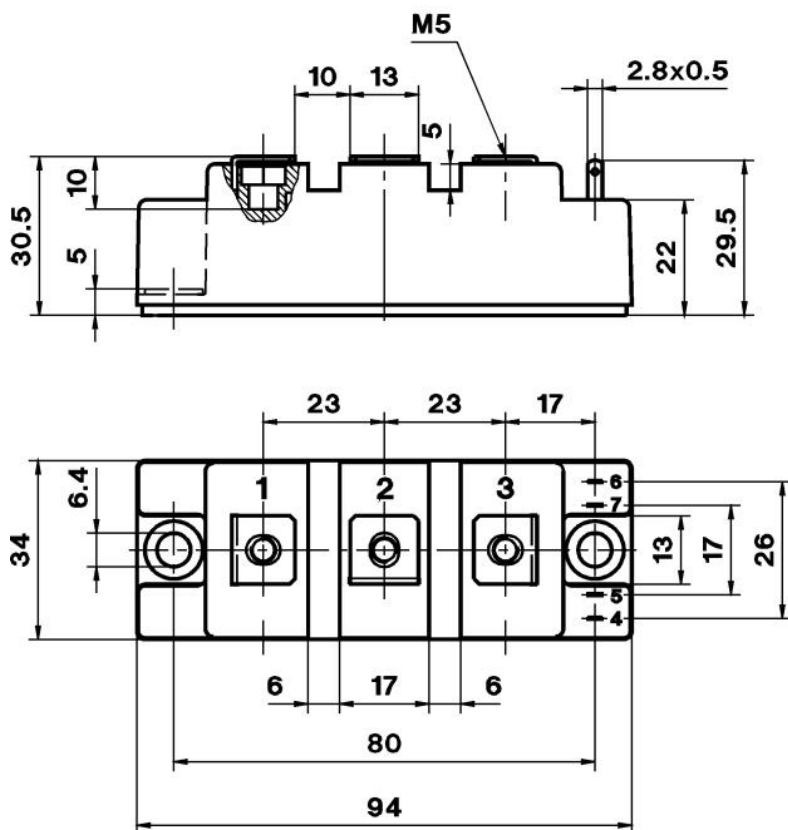




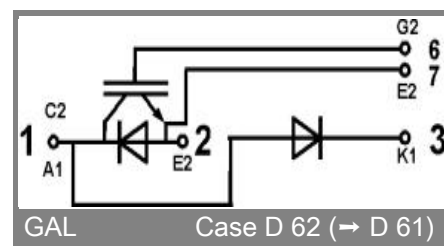
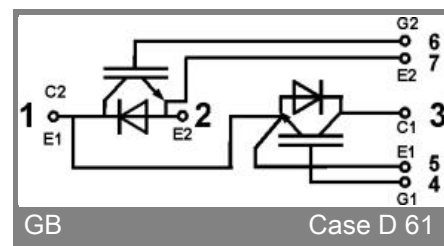
UL Recognized
File no. E 63 532

Dimensions in mm

CASED61



Case D 61



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.