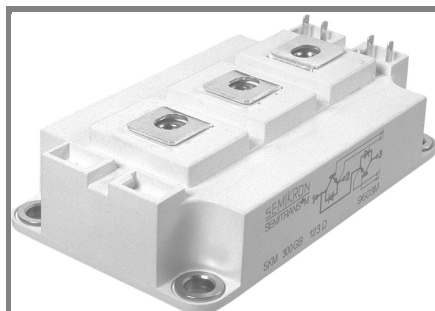


SKM 200GB125D



SEMITRANS™ 3

Ultra Fast IGBT Modules

SKM 200GB125D

SKM 200GAL125D

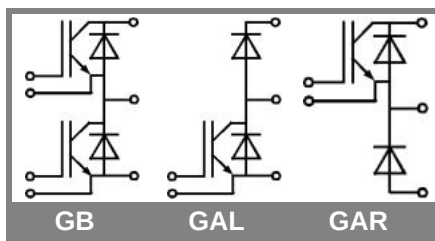
SKM 200GAR125D

Features

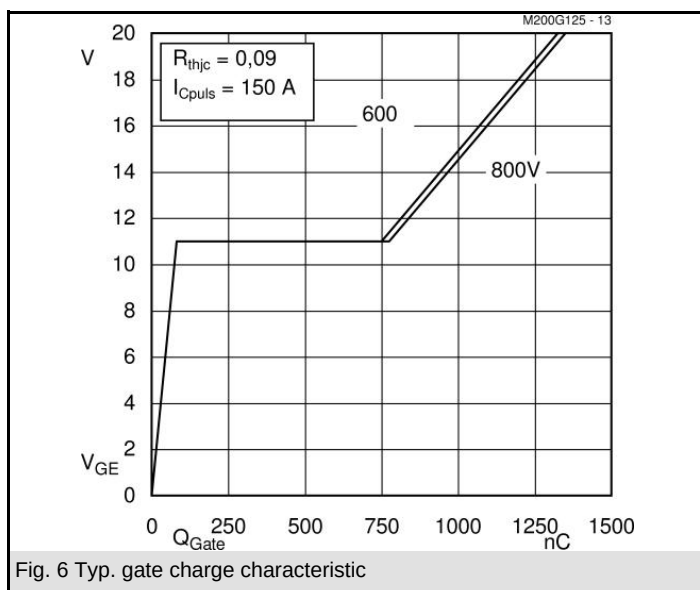
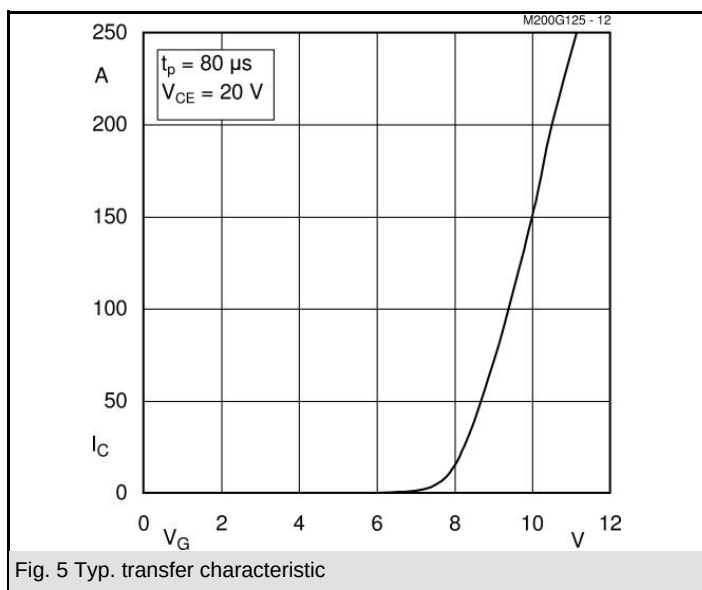
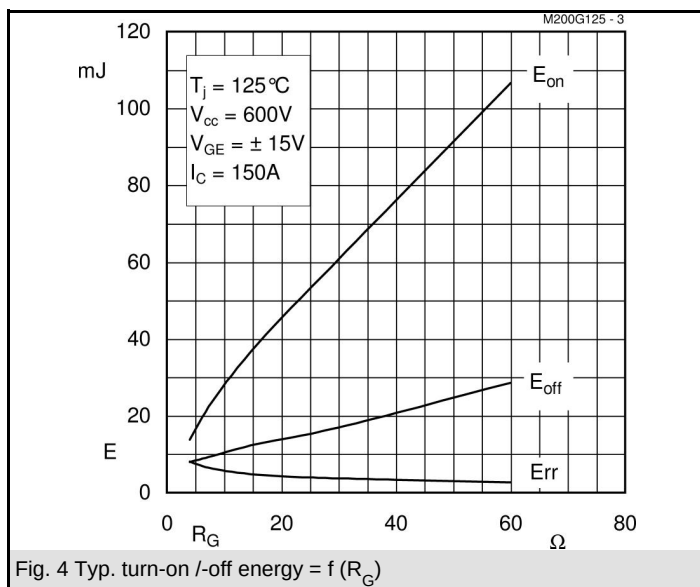
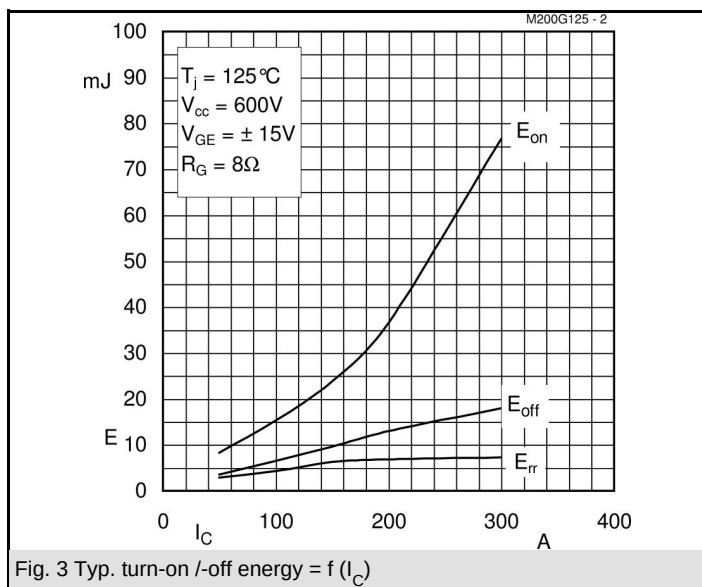
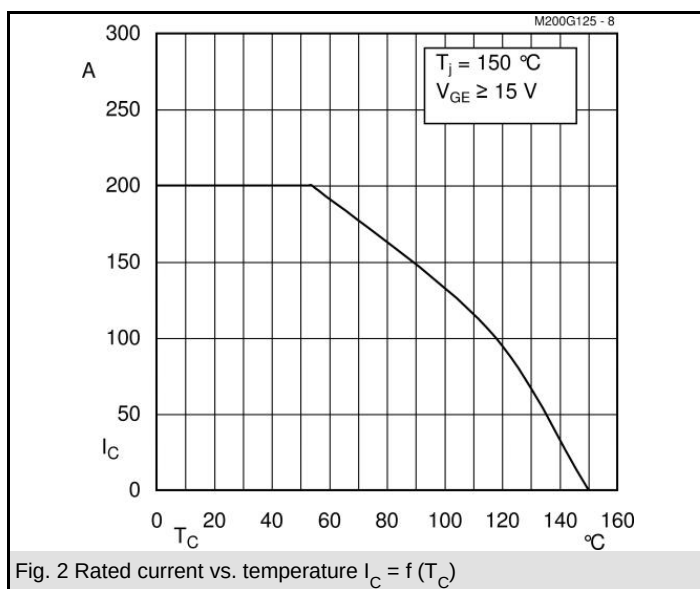
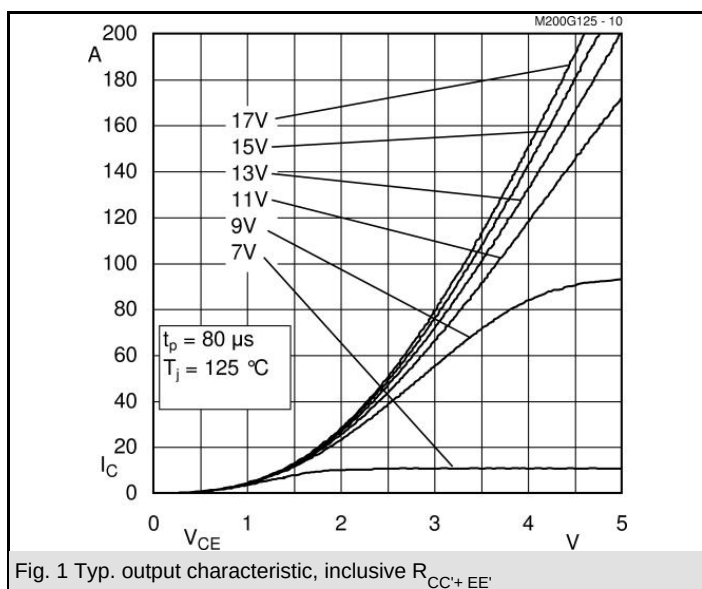
- N channel , homogeneous Si
- Low inductance case
- Short tail current with low temperature dependence
- High short circuit capability, self limiting to $6 \times I_{Cnom}$
- Fast & soft inverse CAL diodes
- Isolated copper baseplate using DCB Direct Copper Bonding Technology
- Large clearance (13 mm) and creepage distance (20 mm)

Typical Applications

- Switched mode power supplies at $f_{sw} > 20$ kHz
- Resonant inverters up to 100 kHz
- Inductive heating
- Electronic welders at $f_{sw} > 20$ kHz



Absolute Maximum Ratings		T _c = 25 °C, unless otherwise specified			
Symbol	Conditions	Values			Units
IGBT					
V _{CES}		1200			V
I _C	T _c = 25 (80) °C	200 (160)			A
I _{CRM}	t _p = 1 ms	300			A
V _{GES}		± 20			V
T _{vj} , (T _{stg})	T _{OPERATION} ≤ T _{stg}	- 40 ... + 150 (125)			°C
V _{isol}	AC, 1 min.	4000			V
Inverse diode					
I _F	T _c = 25 (80) °C	200 (130)			A
I _{FRM}	t _p = 1 ms	300			A
I _{FSM}	t _p = 10 ms; sin.; T _j = 150 °C	1450			A
Freewheeling diode					
I _F	T _c = 25 (80) °C	200 (130)			A
I _{FRM}	t _p = 1 ms	300			A
I _{FSM}	t _p = 10 ms; ; T _j = 150 °C	1450			A
Characteristics		T _c = 25 °C, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
V _{GE(th)}	V _{GE} = V _{CE} , I _C = 6 mA	4,5	5,5	6,5	V
I _{CES}	V _{GE} = 0, V _{CE} = V _{CES} , T _j = 25 (125) °C		0,15	0,45	mA
V _{CE(TO)}	T _j = 25 (125) °C		1,5	1,75	V
r _{CE}	V _{GE} = 15 V, T _j = 25 (125) °C		12	14	mΩ
V _{CE(sat)}	I _{Cnom} = 150 A, V _{GE} = 15 V, chip level		3,3	3,85	V
C _{ies}	under following conditions		10	13	nF
C _{oes}	V _{GE} = 0, V _{CE} = 25 V, f = 1 MHz		1,5	2	nF
C _{res}			0,8	1,2	nF
L _{CE}				20	nH
R _{CC'+EE'}	res., terminal-chip T _c = 25 (125) °C		0,35 (0,5)		mΩ
t _{d(on)}	V _{CC} = 600 V, I _{Cnom} = 150 A		75		ns
t _r	R _{Gon} = R _{Goff} = 4 Ω, T _j = 125 °C		36		ns
t _{d(off)}	V _{GE} = ± 15 V		420		ns
t _f			25		ns
E _{on} (E _{off})			14 (8)		mJ
Inverse diode					
V _F = V _{EC}	I _{Fnom} = 150 A; V _{GE} = 0 V; T _j = 25 (125)		2 (1,8)	2,5	V
V _(TO)	T _j = 25 (125) °C		1,1	1,2	V
r _T	T _j = 25 (125) °C		6	8,7	mΩ
I _{RRM}	I _{Fnom} = 150 A; T _j = 125 () °C		230		A
Q _{rr}	di/dt = 5500 A/μs		24		μC
E _{rr}	V _{GE} = 0 V		6,3		mJ
FWD					
V _F = V _{EC}	I _F = 150 A; V _{GE} = 0 V, T _j = 25 (125) °C		2 (1,8)	2,5	V
V _(TO)	T _j = 25 (125) °C		1,1	1,2	V
r _T	T _j = 25 (125) °C		6	8,7	mΩ
I _{RRM}	I _F = 150 A; T _j = 125 () °C		230		A
Q _{rr}	di/dt = 5500 A/μs		24		μC
E _{rr}	V _{GE} = 0 V		6,3		mJ
Thermal characteristics					
R _{th(j-c)}	per IGBT			0,09	K/W
R _{th(j-c)D}	per Inverse Diode			0,25	K/W
R _{th(j-c)FD}	per FWD			0,25	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	2,5		5	Nm
w				325	g



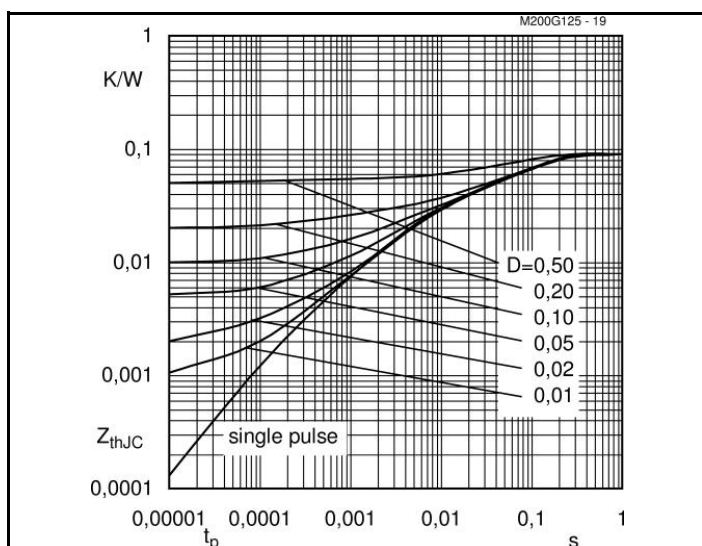
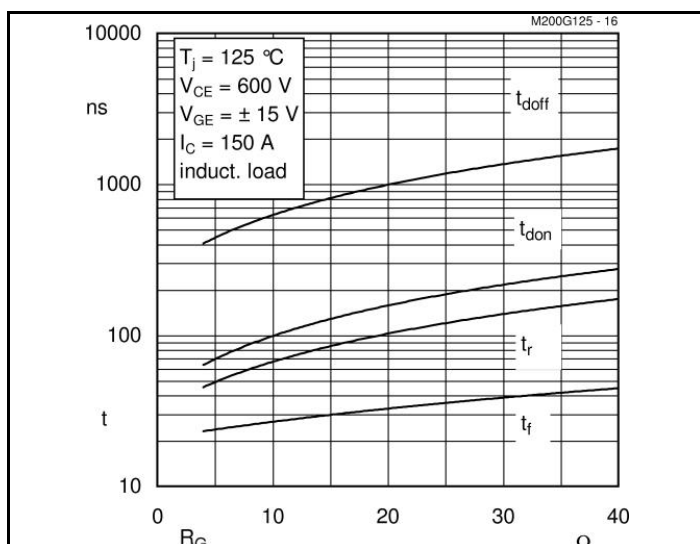
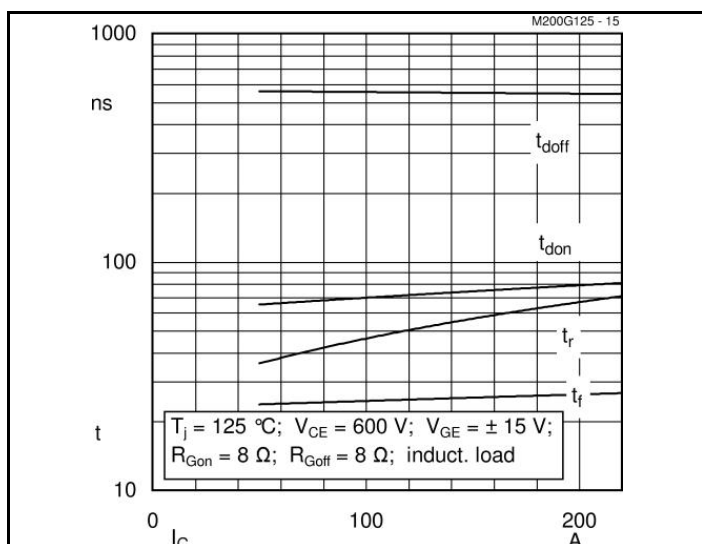


Fig. 9 Transient thermal impedance of IGBT

$$Z_{th(j-c)} = f(t_p); D = t_p / t_c = t_p \cdot f$$

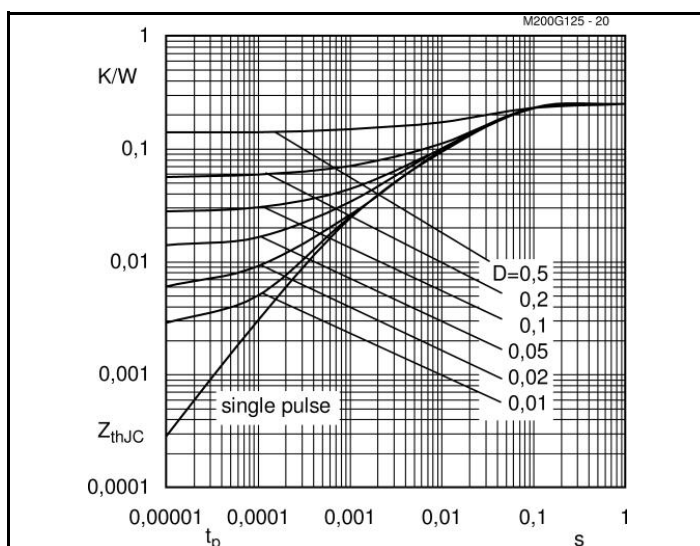


Fig. 10 Transient thermal impedance of FWD

$$Z_{th(j-c)} = f(t_p); D = t_p / t_c = t_p \cdot f$$

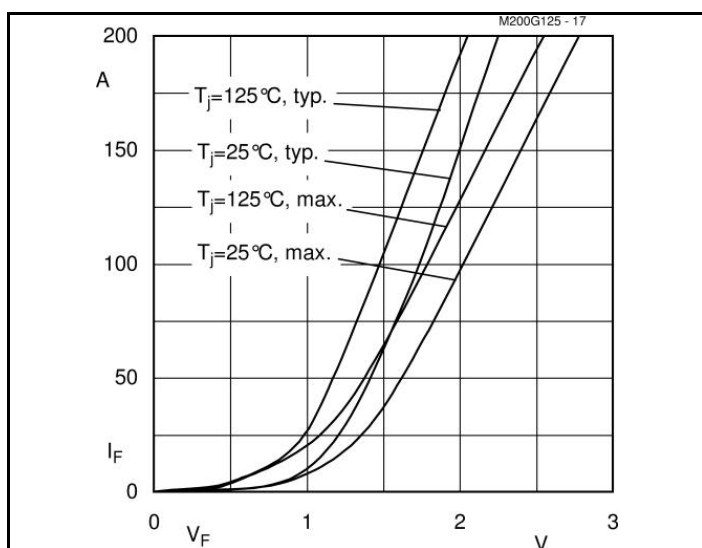


Fig. 11 CAL diode forward characteristic

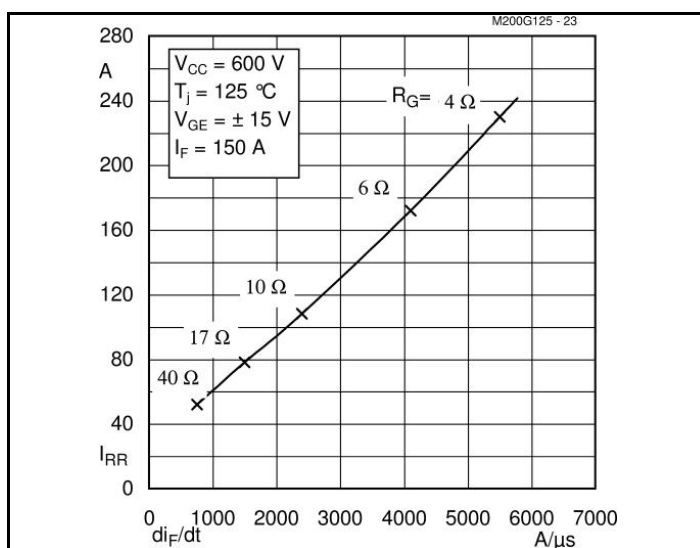
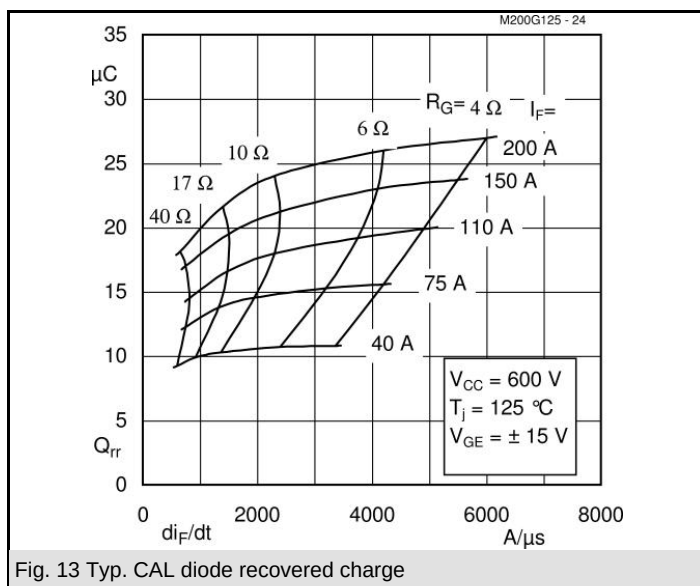


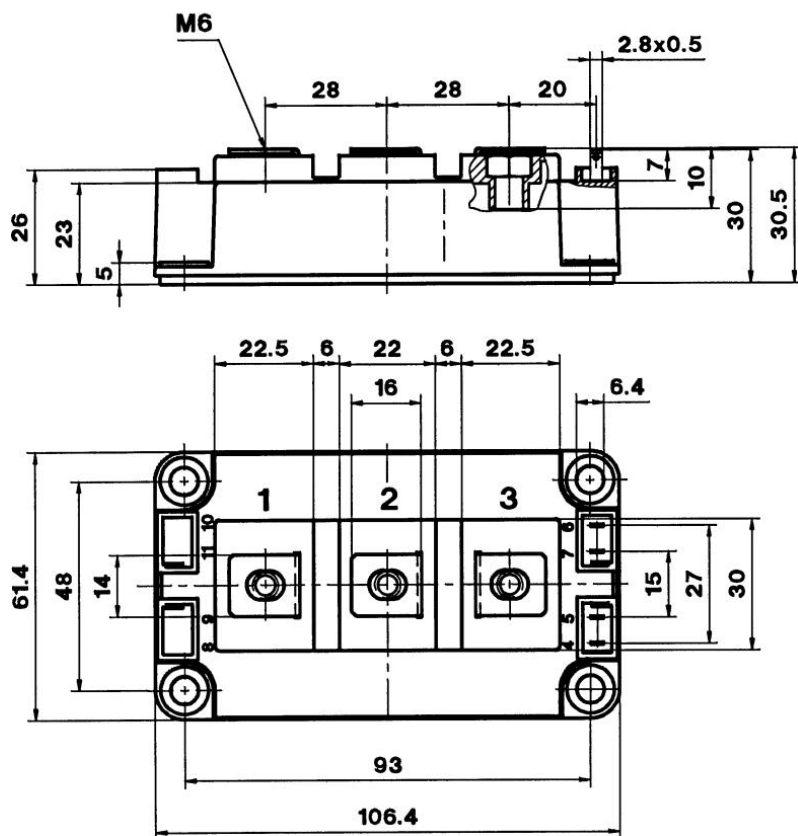
Fig. 12 Typ. CAL diode peak reverse recovery current



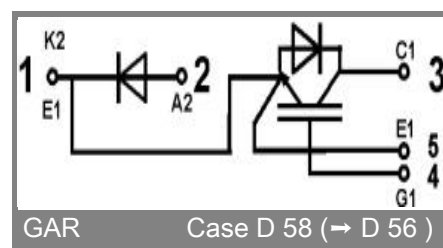
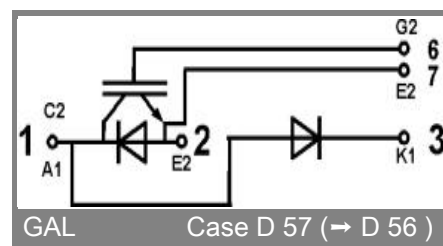
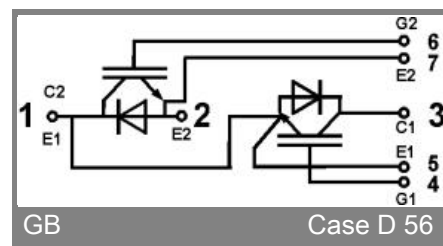
UL Recognized
File no. E 63 532

Dimensions in mm

CASED56



Case D 56



This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

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