



SEMITOP® 1

IGBT Module

SK25GB063

SK25GAL063

SK25GAR063

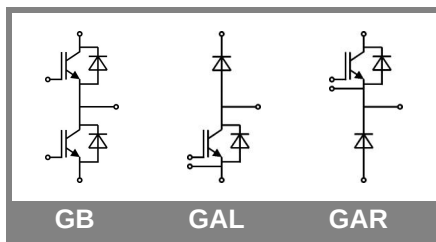
Preliminary Data

Features

- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonding aluminium oxide ceramic (DBC)
- N-channel homogeneous silicon structure (NPT-Non punch-through IGBT)
- High short circuit capability
- Low tail current with low temperature dependence
- UL recognized, file no. E 63 532

Typical Applications

- Switching (not for linear use)
- Inverter
- Switched mode power supplies
- UPS



Absolute Maximum Ratings			T _s = 25 °C, unless otherwise specified	
Symbol	Conditions		Values	Units
IGBT				
V _{CES}	T _j = 25 °C		600	V
I _C	T _j = 125 °C	T _s = 25 °C	30	A
		T _s = 80 °C	21	A
I _{CRM}	I _{CRM} = 2 x I _{Cnom} , t _p = 1 ms		60	A
V _{GES}			± 20	V
t _{psc}	V _{CC} = 300 V; V _{GE} ≤ 20 V; T _j = 125 °C V _{CES} < 600 V		10	μs
Inverse Diode				
I _F	T _j = 150 °C	T _s = 25 °C	36	A
		T _s = 80 °C	24	A
I _{FRM}	I _{FRM} = 2 x I _{Fnom} , t _p = 1 ms		50	A
Freewheeling Diode				
I _F	T _j = 150 °C	T _s = 25 °C	36	A
		T _s = 80 °C	24	A
I _{FRM}			50	A
Module				
I _{t(RMS)}				A
T _{vj}			-40 ... +150	°C
T _{stg}			-40 ... +125	°C
V _{isol}	AC, 1 min.		2500	V

Characteristics			T _s = 25 °C, unless otherwise specified			
Symbol	Conditions		min.	typ.	max.	Units
IGBT						
V _{GE(th)}	V _{GE} = V _{CE} , I _C = 0,7 mA		4,5	5,5	6,5	V
I _{CES}	V _{GE} = 0 V, V _{CE} = V _{CES}	T _j = 25 °C T _j = 125 °C			0,1	mA mA
I _{GES}	V _{CE} = 0 V, V _{GE} = 30 V	T _j = 25 °C T _j = 125 °C			120	nA nA
V _{CE0}		T _j = 25 °C T _j = 125 °C		1 0,8		V V
r _{CE}	V _{GE} = 15 V	T _j = 25°C T _j = 125°C		40 55		mΩ mΩ
V _{CE(sat)}	I _{Cnom} = 30 A, V _{GE} = 15 V	T _j = 25°C _{chiplev.} T _j = 125°C _{chiplev.}		2 1,9	2,5 2,4	V V
C _{ies} C _{oes} C _{res}	V _{CE} = 25, V _{GE} = 0 V	f = 1 MHz		1,3 0,1		nF nF nF
Q _G	V _{GE} =0 ... 20 V			125		nC
t _{d(on)} t _r E _{on}	R _{Gon} = 33 Ω	V _{CC} = 300V I _{Cnom} = 25A		30 35 1,25		ns ns mJ
t _{d(off)} t _f E _{off}	R _{Goff} = 33 Ω	T _j = 125 °C V _{GE} =±15V		200 25 0,9		ns ns mJ
R _{th(j-s)}	per IGBT				1,4	K/W



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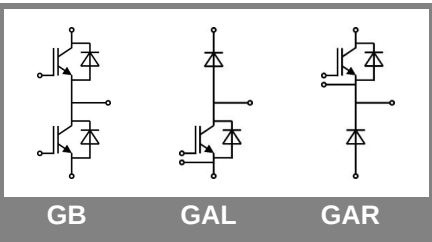
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Typical Applications

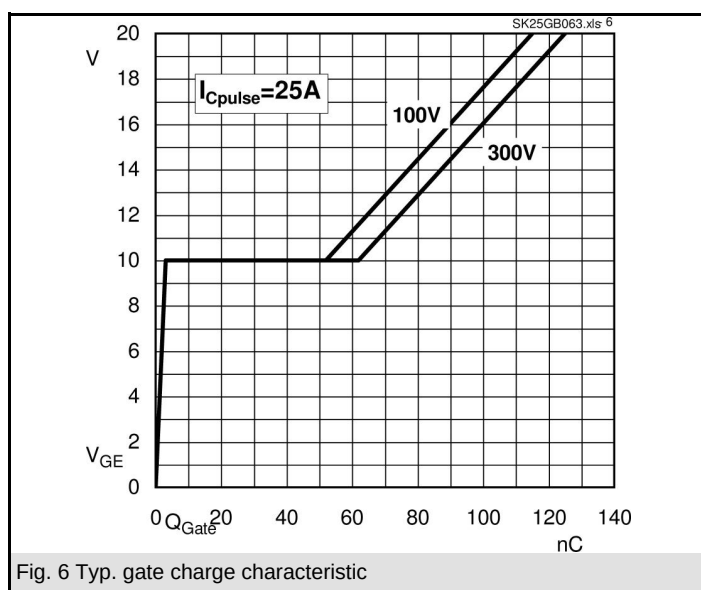
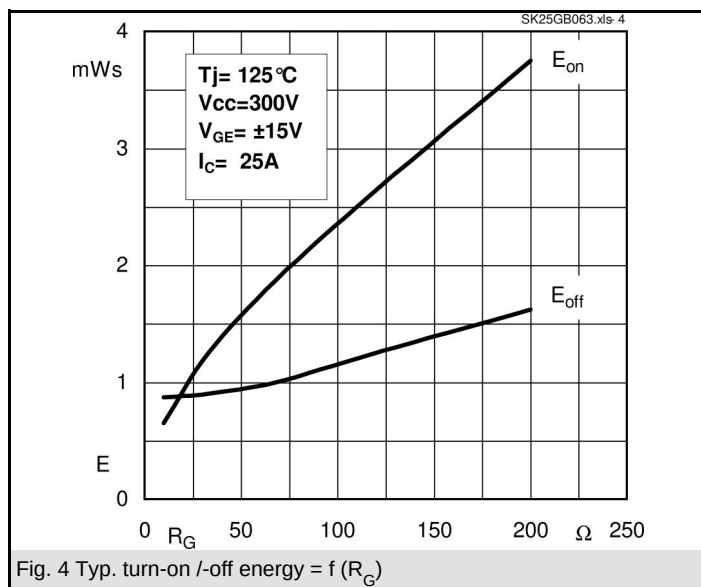
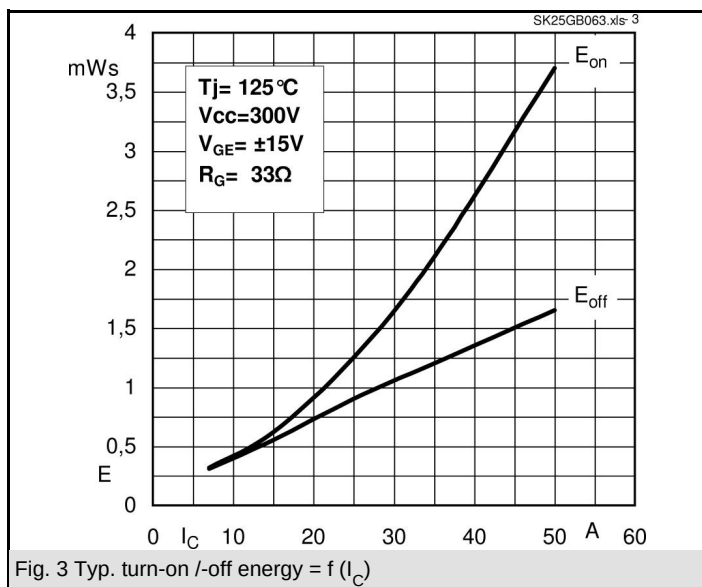
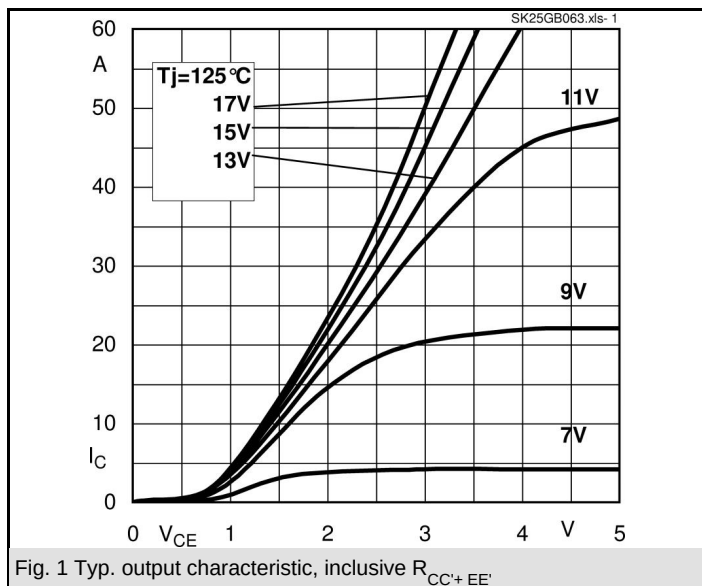
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- Switched mode power supplies
- UPS

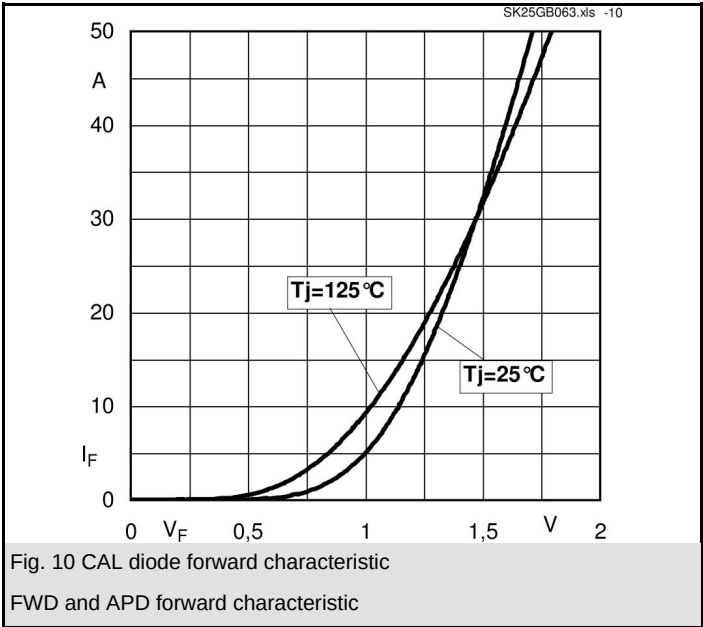
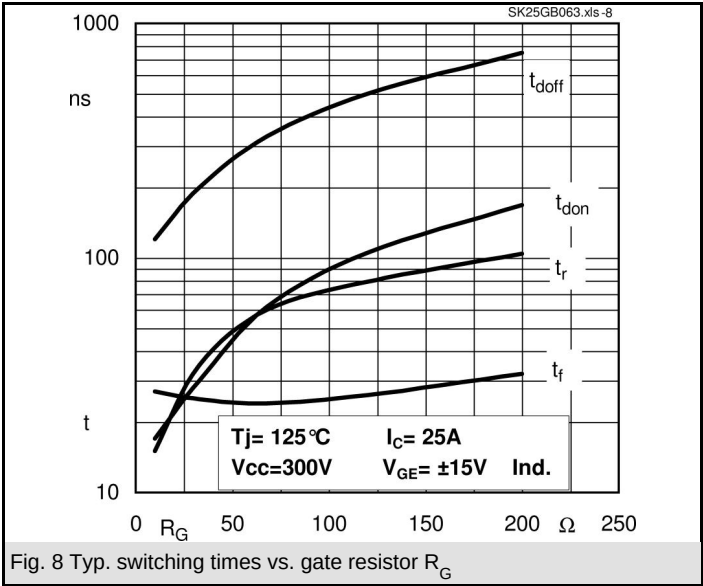
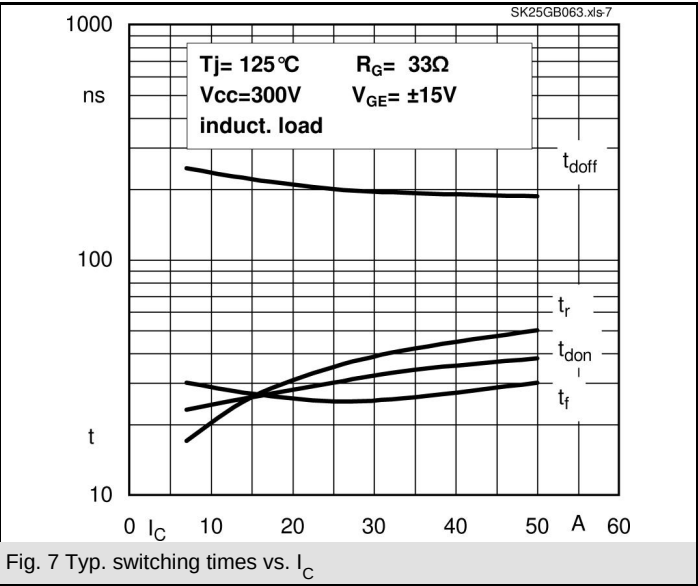


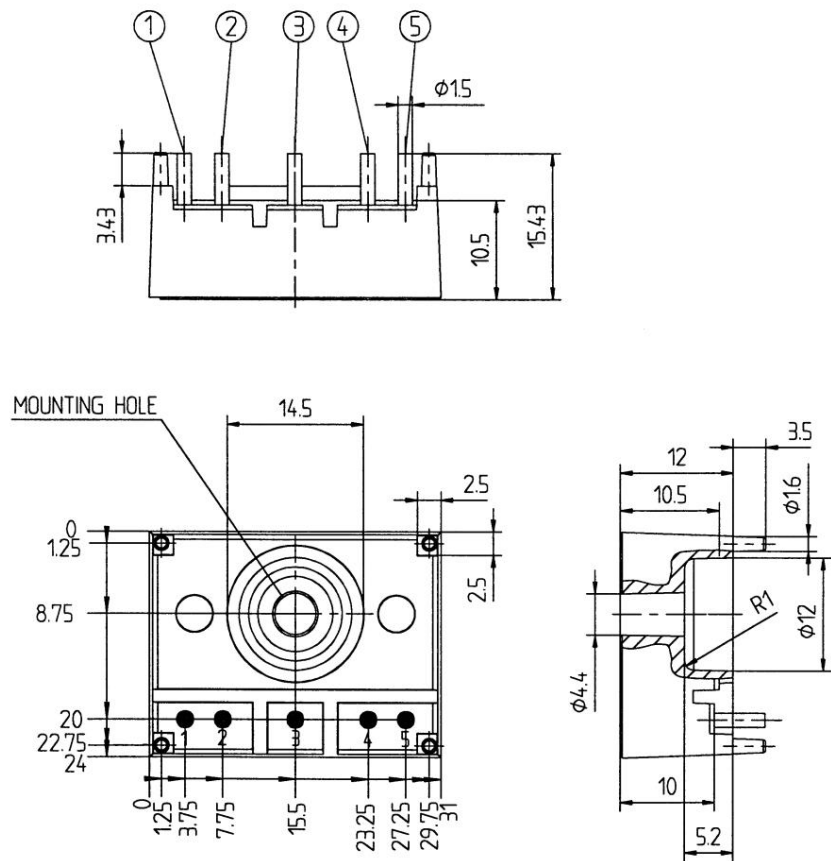
Characteristics						
Symbol	Conditions		min.	typ.	max.	Units
Inverse Diode						
V _F = V _{EC}	I _{Fnom} = 25 A; V _{GE} = 0 V	T _j = 25 °C _{chiplev.}		1,45	1,7	V
		T _j = 125 °C _{chiplev.}		1,4	1,75	V
V _{F0}		T _j = 125 °C		0,85	0,9	V
r _F		T _j = 125 °C		22	32	mΩ
I _{RRM}	I _{Fnom} = 25 A di/dt = -500 A/μs V _{CC} = 300V	T _j = 125 °C		16		A
Q _{rr}				2		μC
E _{rr}				0,25		mJ
R _{th(j-s)D}	per diode				1,7	K/W
Freewheeling Diode						
V _F = V _{EC}	I _{Fnom} = 25 A; V _{GE} = 0 V	T _j = 25 °C _{chiplev.}		1,45	1,7	V
		T _j = 125 °C _{chiplev.}		1,4	1,75	V
V _{F0}		T _j = 125 °C		0,85	0,9	V
r _F		T _j = 125 °C		22	32	V
I _{RRM}	I _{Fnom} = 25 A di/dt = -500 A/μs V _R =300V	T _j = 125 °C		16		A
Q _{rr}				2		μC
E _{rr}				0,25		mJ
R _{th(j-s)FD}	per diode				1,7	K/W
M _s	to heat sink M1				1,5	Nm
w				13		g

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

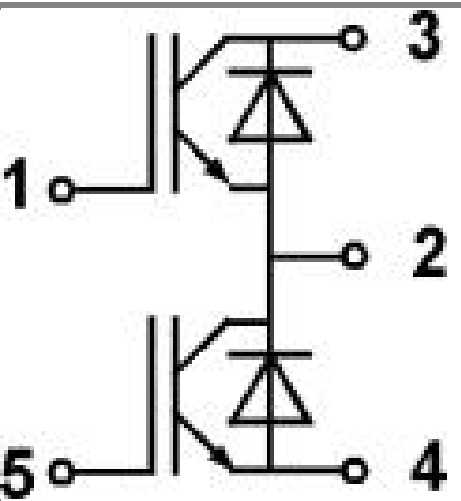
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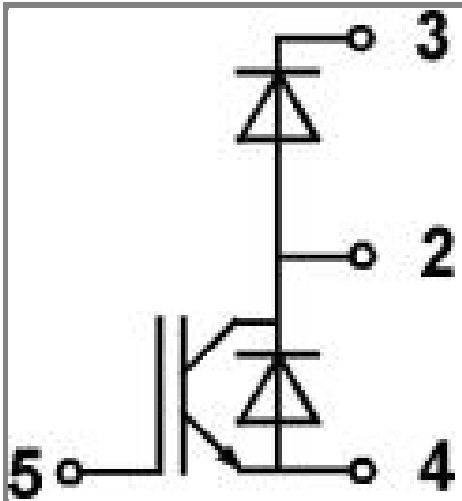




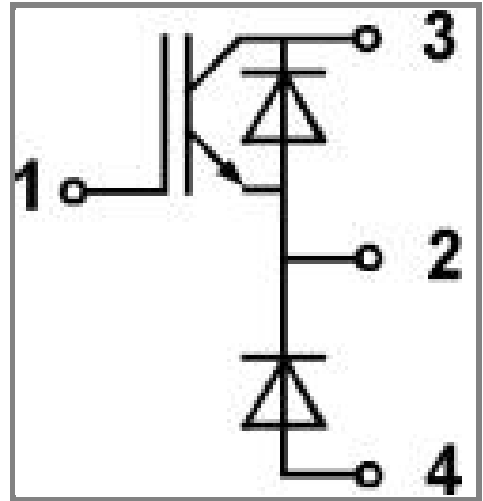
Case T3 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T3 GB



Case T3 GAL



Case T3 GAR