

SK50GD066ETp



SEMITOP® 3 Press-Fit

Sixpack Open Emitter

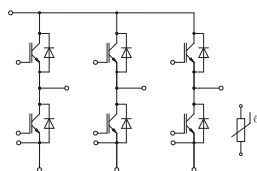
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Features*

- One screw mounting module
- Low inductive design
- Press-Fit contact technology
- Fully compatible with other SEMITOP® Press-Fit types
- 600V Trench IGBT3 technology
- Robust and soft switching CAL HD diode technology
- Integrated NTC temperature sensor
- UL recognized, file no. E 63 532

Typical Applications

- Motor drives
- Servo drives
- Air conditioning
- Auxiliary Inverters
- UPS



GD-ET

Absolute Maximum Ratings

Symbol	Conditions		Values	Unit
IGBT 1				
V _{CES}	T _j = 25 °C		600	V
I _C	T _j = 150 °C	T _s = 25 °C	53	A
		T _s = 70 °C	39	A
I _C	T _j = 175 °C	T _s = 25 °C	59	A
		T _s = 70 °C	47	A
I _{Cnom}			50	A
I _{CRM}			100	A
V _{GES}			-20 ... 20	V
t _{psc}	V _{CC} = 360 V V _{GE} ≤ 15 V V _{CES} ≤ 600 V	T _j = 150 °C	6	µs
T _j			-40 ... 175	°C

Absolute Maximum Ratings

Symbol	Conditions		Values	Unit
Diode 1				
V _{RRM}	T _j = 25 °C		600	V
I _F	T _j = 150 °C	T _s = 25 °C	46	A
		T _s = 70 °C	34	A
I _F	T _j = 175 °C	T _s = 25 °C	52	A
		T _s = 70 °C	41	A
I _{FRM}			100	A
I _{FSM}	10 ms, sin 180°, T _j = 150 °C		320	A
T _j			-40 ... 175	°C

Absolute Maximum Ratings

Symbol	Conditions	Values	Unit
Module			
$I_{t(RMS)}$	$\Delta T_{terminal}$ at PCB joint = 30 K, per pin	35	A
T_{stg}		-40 ... 125	°C
V_{isol}	AC, sinusoidal, $t = 1\text{ min}$	2500	V



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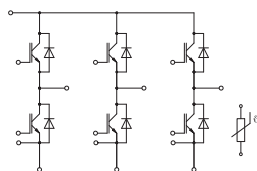
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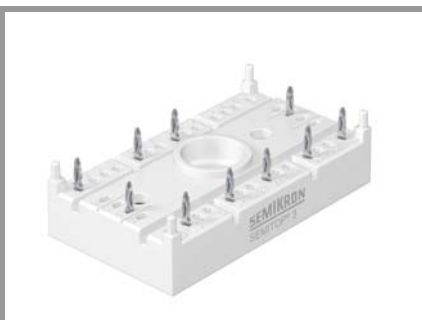
Characteristics						
Symbol	Conditions		min.	typ.	max.	Unit
IGBT 1						
V _{CE(sat)}	I _C = 50 A	T _j = 25 °C		1.45	1.85	V
	V _{GE} = 15 V chiplevel	T _j = 150 °C		1.65	2.05	V
V _{CE0}	chiplevel	T _j = 25 °C		0.90	1.10	V
		T _j = 150 °C		0.80	1.00	V
r _{CE}	V _{GE} = 15 V	T _j = 25 °C		11	15	mΩ
	chiplevel	T _j = 150 °C		17	21	mΩ
V _{GE(th)}	V _{GE} = V _{CE} , I _C = 0.8 mA		5	5.8	6.5	V
I _{CES}	V _{GE} = 0 V	T _j = 25 °C			0.05	mA
	V _{CE} = 600 V			-		mA
C _{ies}	V _{CE} = 25 V V _{GE} = 0 V	f = 1 MHz		3.14		nF
C _{oes}		f = 1 MHz		0.2		nF
C _{res}		f = 1 MHz		0.093		nF
Q _G		V _{GE} = - 8 V...+ 15 V			250	
R _{Gint}	T _j = 25 °C			0		Ω
t _{d(on)}	V _{CC} = 300 V	T _j = 150 °C		28		ns
t _r	I _C = 50 A	T _j = 150 °C		32		ns
E _{on}	V _{GE neg} = -7 V	T _j = 150 °C		2.2		mJ
t _{d(off)}	V _{GE pos} = 15 V	T _j = 150 °C		301		ns
t _f	R _{G on} = 16 Ω	T _j = 150 °C		45		ns
	R _{G off} = 16 Ω	T _j = 150 °C				
E _{off}	dI/dt _{on} = 2438 A/μs dI/dt _{off} = 2438 A/μs	T _j = 150 °C		1.73		mJ
R _{th(j-s)}	per IGBT, λ _{paste} =0.8 W/(mK)			1.11		K/W

Characteristics						
Symbol	Conditions		min.	typ.	max.	Unit
Diode 1						
V _F	I _F = 50 A	T _j = 25 °C		1.47	1.87	V
	chiplevel	T _j = 150 °C		1.50	1.78	V
V _{F0}	chiplevel	T _j = 25 °C		0.99	1.10	V
		T _j = 150 °C		0.80	0.89	V
r _F	chiplevel	T _j = 25 °C		9.6	15	mΩ
		T _j = 150 °C		14	18	mΩ
I _{RRM}	I _F = 50 A	T _j = 150 °C		44		A
Q _{rr}	di/dt _{off} = 2438 A/μs	T _j = 150 °C		4.8		μC
E _{rr}	V _{GE} = -7 V	T _j = 150 °C		0.72		mJ
	V _{CC} = 300 V					
R _{th(j-s)}	per Diode			1.7		K/W



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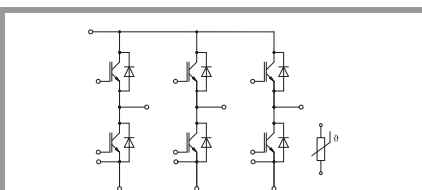
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Characteristics					
Symbol	Conditions	min.	typ.	max.	Unit
Module					
M_s	to heatsink	2.25		2.5	Nm
w	weight		30		g

Characteristics					
Symbol	Conditions	min.	typ.	max.	Unit
Temperature Sensor					
R_{100}	$T_r = 100\text{ °C}$		$493 \pm 5\%$		Ω
$B_{100/125}$	$R_{(T)} = R_{100} \exp[B_{100/125}(1/T - 1/T_{100})]$; $T[K]$		$3550 \pm 2\%$		K



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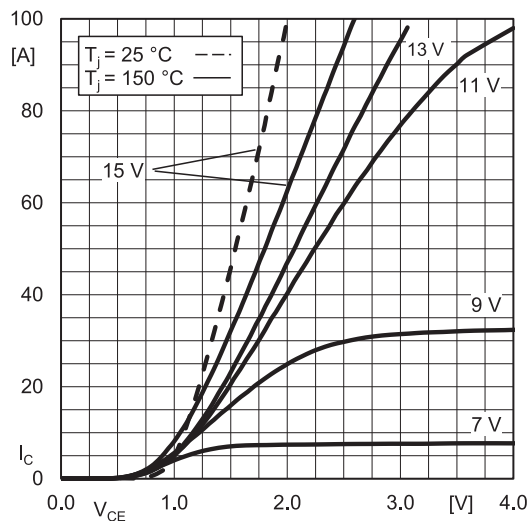


Fig. 1: Typ. output characteristic, inclusive $R_{CC}+EE'$

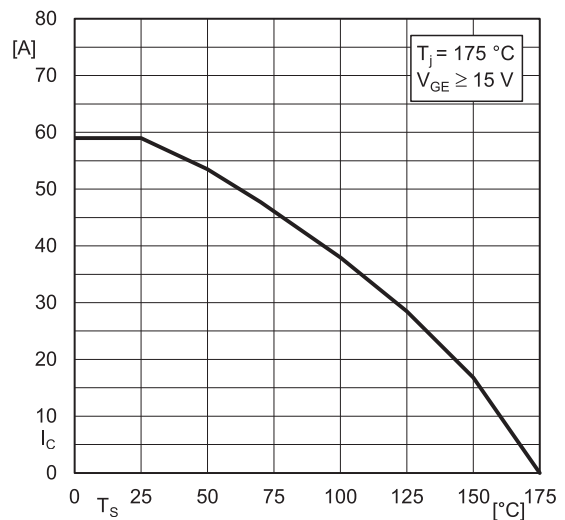


Fig. 2: Typ. rated current vs. temperature $I_C = f(T_S)$

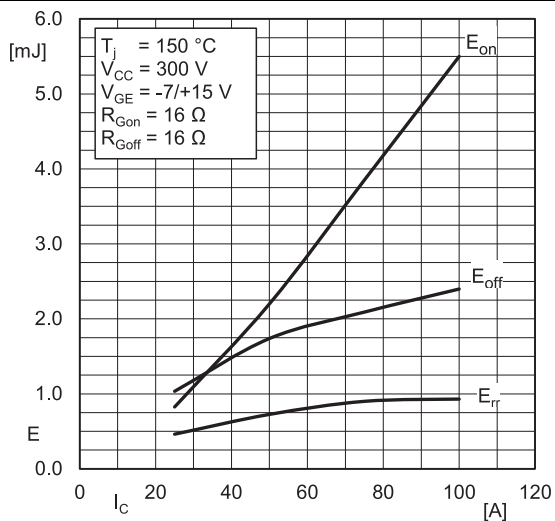


Fig. 3: Typ. turn-on /-off energy = $f(I_C)$

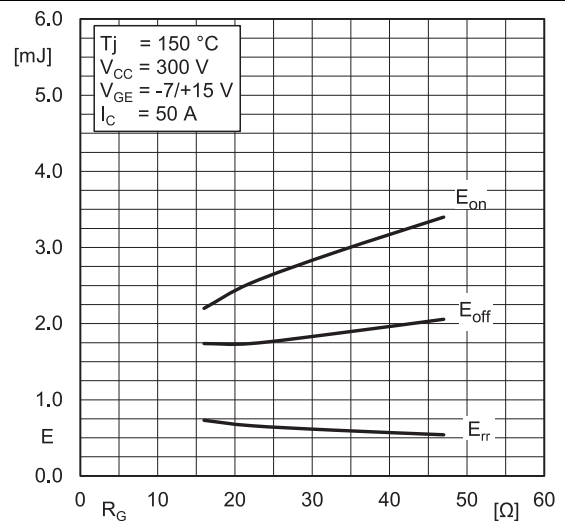


Fig. 4: Typ. turn-on /-off energy = $f(R_G)$

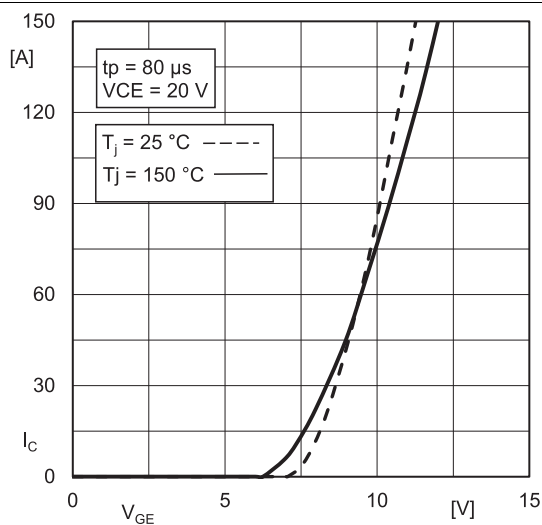


Fig. 5: Typ. IGBT1 transfer characteristic

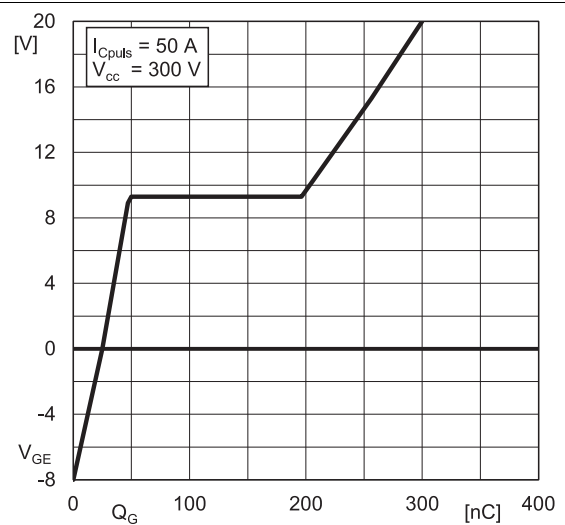


Fig. 6: Typ. gate charge characteristic

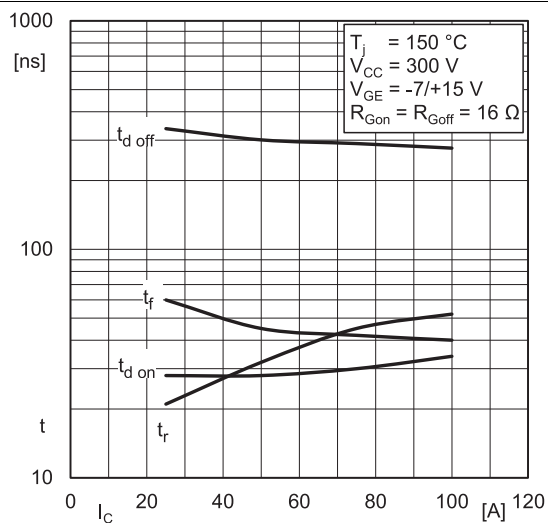


Fig. 7: Typ. switching times vs. I_C

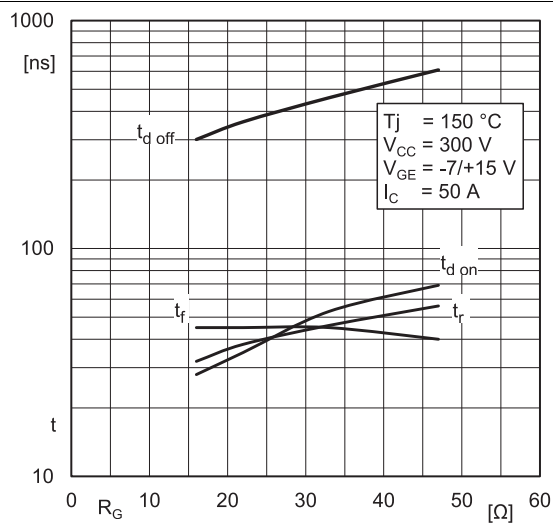


Fig. 8: Typ. switching times vs. gate resistor R_G

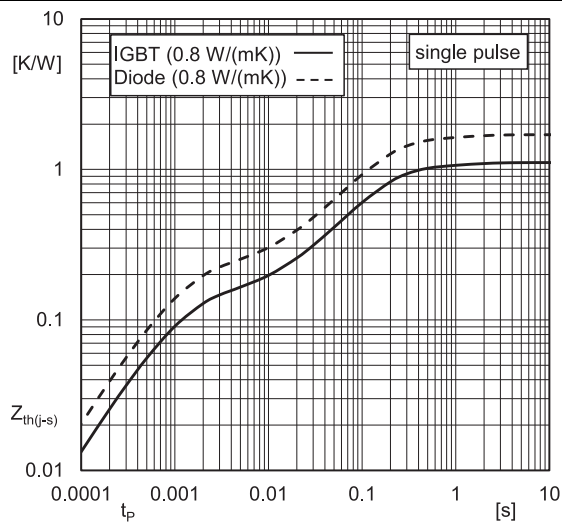


Fig. 9: Typ. transient thermal impedance

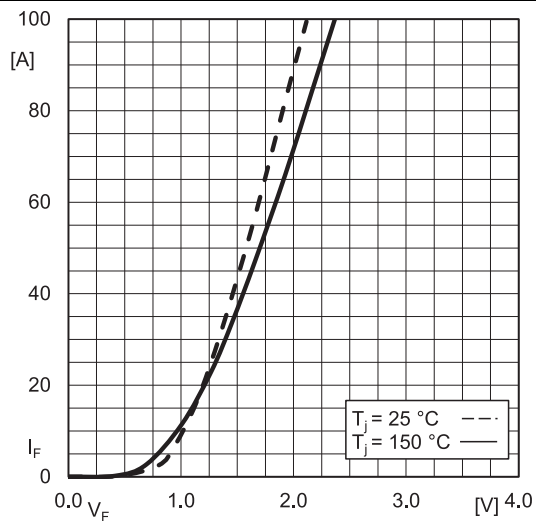
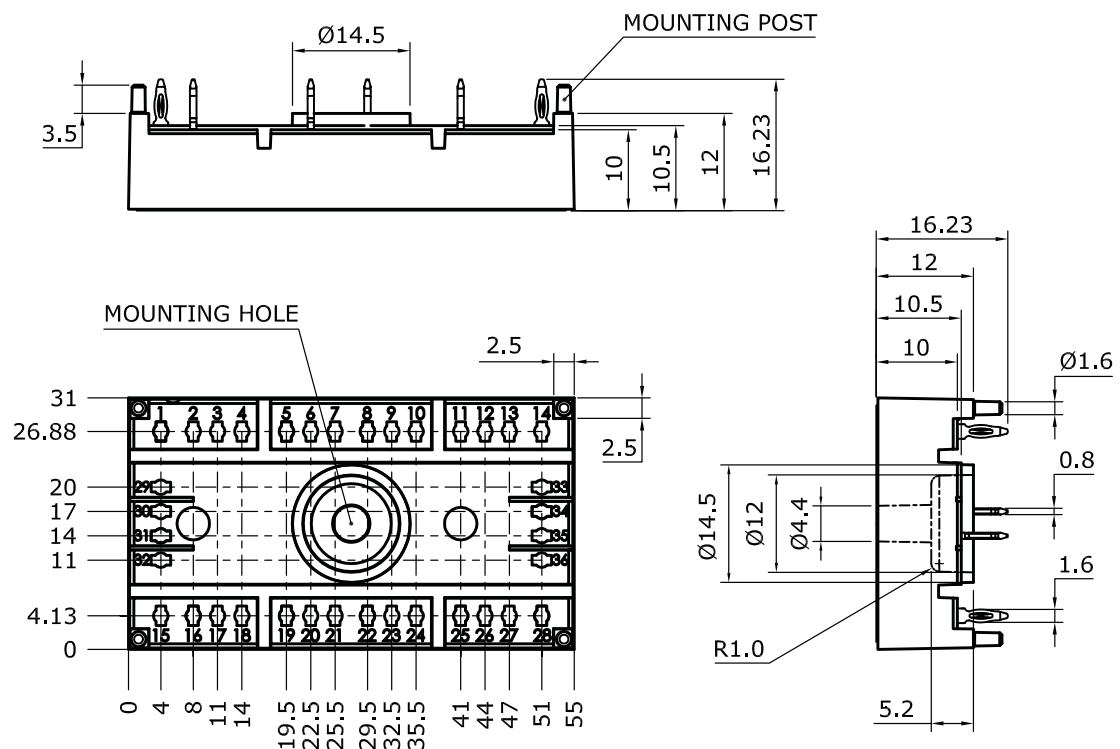


Fig. 10: Typ. CAL diode forward charact., incl. $R_{CC'} + EE'$

Dimensions: mm

Tolerance system: ISO 2768-m



Suggested drilled hole diameter for terminal pins in the circuit board:

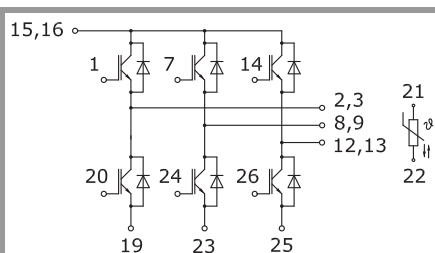
- minimum: 1.575 mm
- typical: 1.6 mm
- maximum: 1.625 mm

Suggested hole diameter for the mounting post in the circuit board:

- 2 mm

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This is an electrostatic discharge sensitive device (ESDS) due to international standard IEC 61340.

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