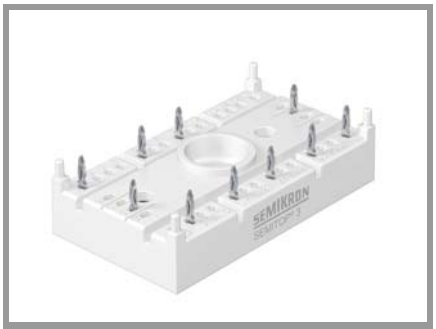
SK50GD066ETp



SEMITOP® 3 Press-Fit

Sixpack Open Emitter

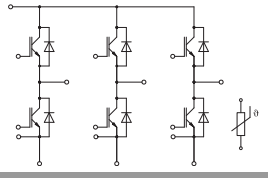
SK50GD066ETp

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

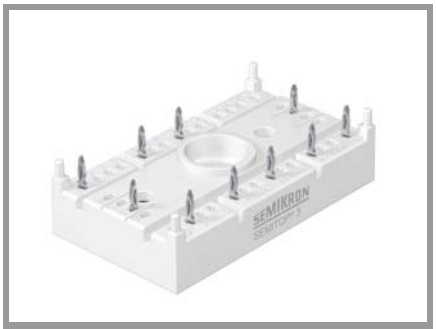


GD-ET

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 $V_{GE} \leq$ 15 V $V_{CES} \leq$ 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 min	2500	V



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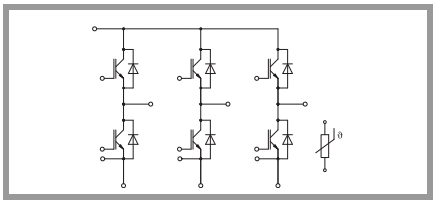
Characteristics

Symbol	Conditions		min.	typ.	max.	Unit
IGBT 1						
$V_{CE(sat)}$	I_C = 50 A V_{GE} = 15 V chiplevel	T_j = 25 °C		1.45	1.85	V
		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 chiplevel	T_j = 25 °C		11	15	mΩ
		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 V_{CE} = 600 V	T_j = 25 °C			0.05	mA
				-		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		nC
R_{Gint}	T_j = 25 °C			0		Ω
$t_{d(on)}$	V_{CC} = 300 V I_C = 50 A $V_{GE\ neg}$ = -7 V $V_{GE\ pos}$ = 15 V $R_{G\ on}$ = 16 Ω $R_{G\ off}$ = 16 Ω di/dt_{on} = 2438 A/µs di/dt_{off} = 2438 A/µs	T_j = 150 °C		28		ns
t_r		T_j = 150 °C		32		ns
E_{on}		T_j = 150 °C		2.2		mJ
$t_{d(off)}$		T_j = 150 °C		301		ns
t_f		T_j = 150 °C		45		ns
E_{off}		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 di/dt_{off} = 2438 A/µs V_{GE} = -7 V V_{CC} = 300 V	T_j = 150 °C		44		A
Q_{rr}		T_j = 150 °C		4.8		µC
E_{rr}		T_j = 150 °C		0.72		mJ
$R_{th(j-s)}$	per Diode			1.7		K/W



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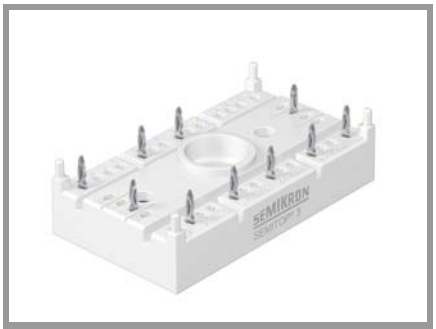

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Typical Applications

- Motor drives
- Servo drives
- Air conditioning
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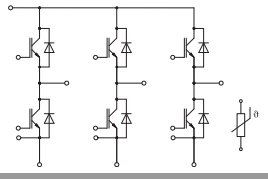
- UPS

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 °C		493 ± 5%		Ω
$B_{100/125}$	$R_{(T)}=R_{100}\exp[B_{100/125}(1/T-1/T_{100})]$; T[K];		3550 ±2%		K



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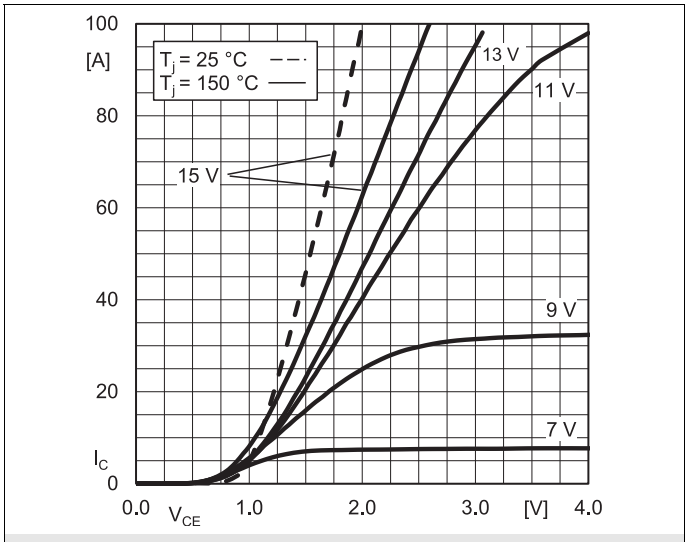


Fig. 1: Typ. output characteristic, inclusive $R_{CC'+EE'}$

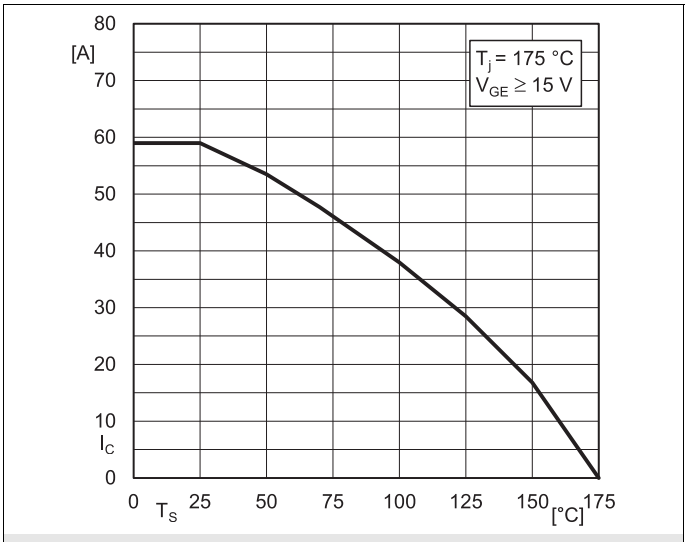


Fig. 2: Typ. rated current vs. temperature $I_C = f(T_S)$

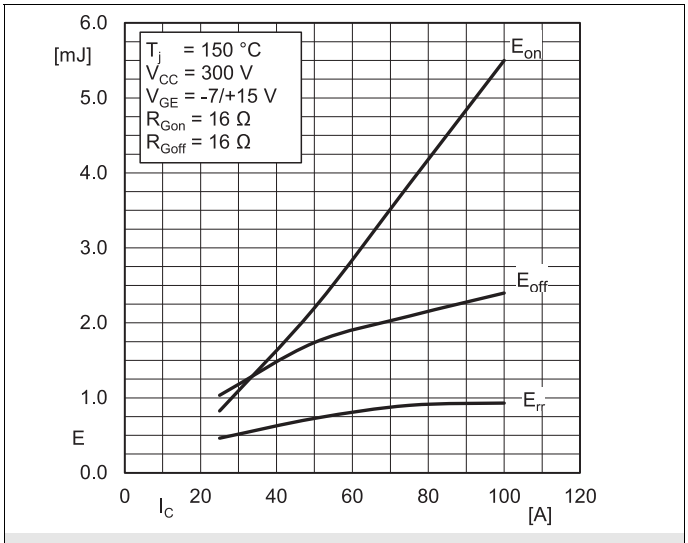


Fig. 3: Typ. turn-on /-off energy = f (I_C)

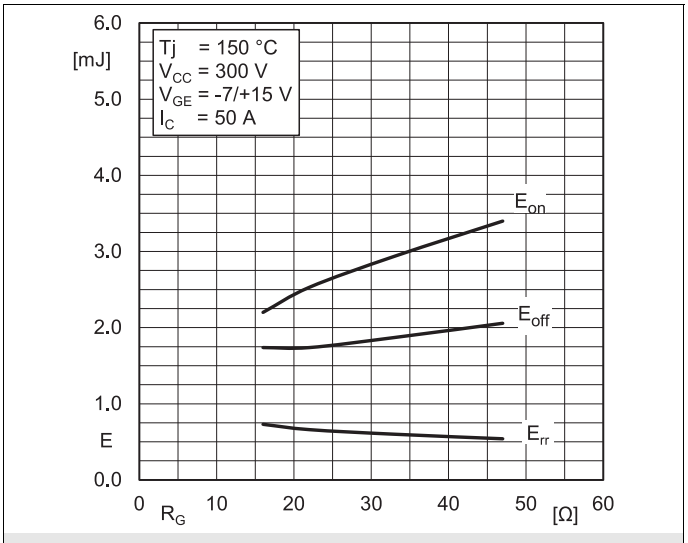


Fig. 4: Typ. turn-on /-off energy = f (R_G)

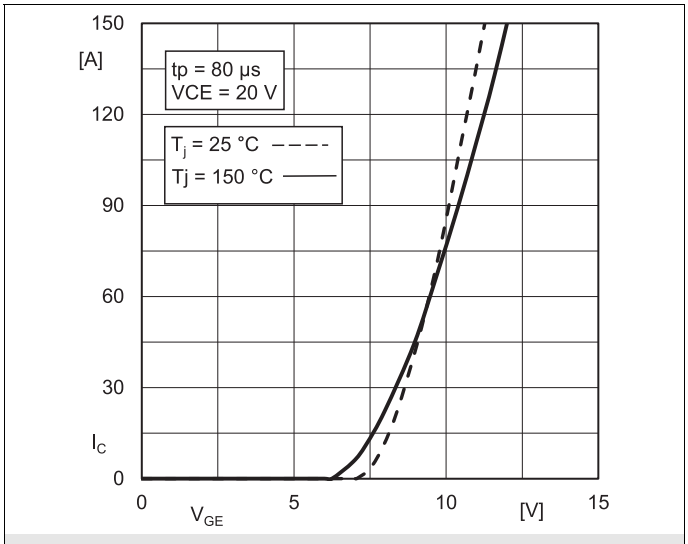


Fig. 5: Typ. IGBT1 transfer characteristic

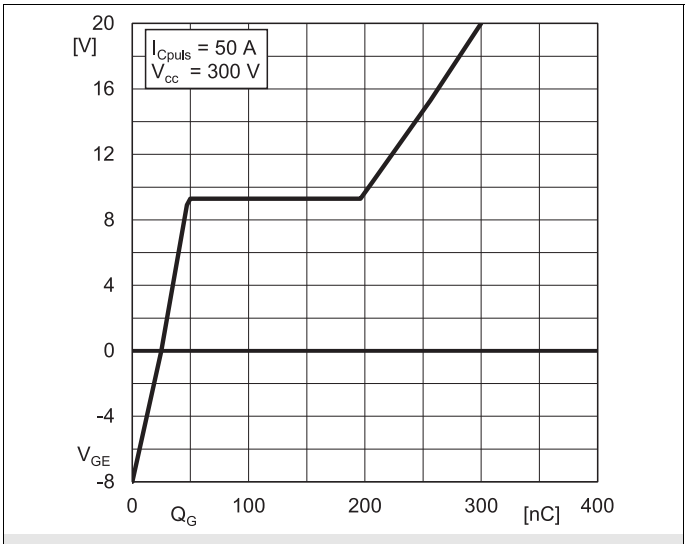


Fig. 6: Typ. gate charge characteristic

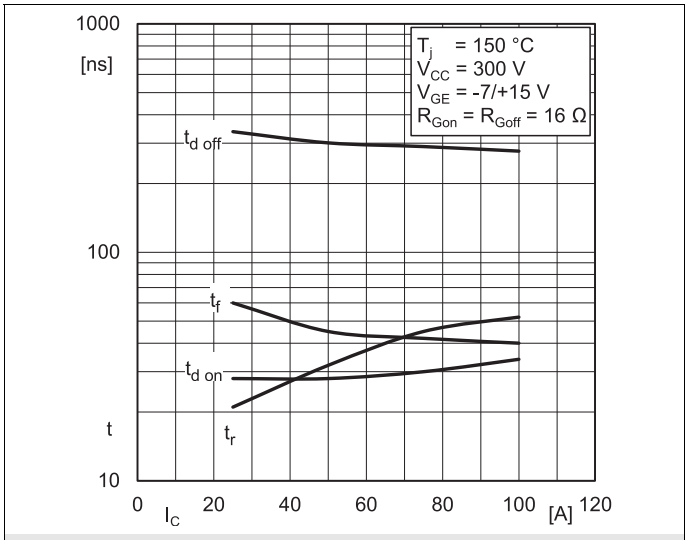


Fig. 7: Typ. switching times vs. I_C

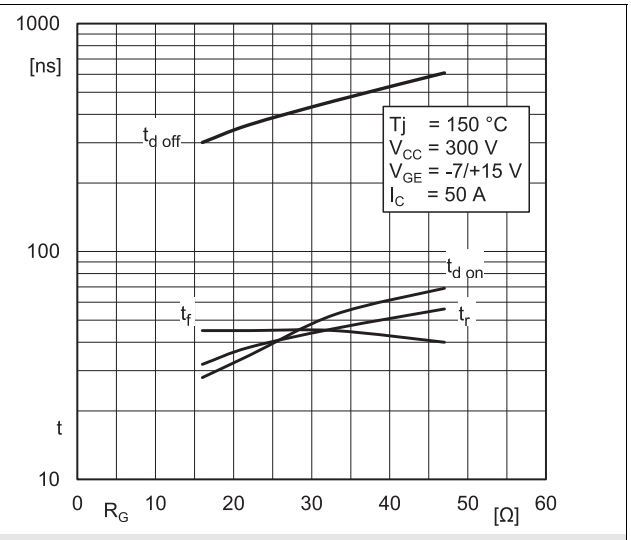


Fig. 8: Typ. switching times vs. gate resistor R_G

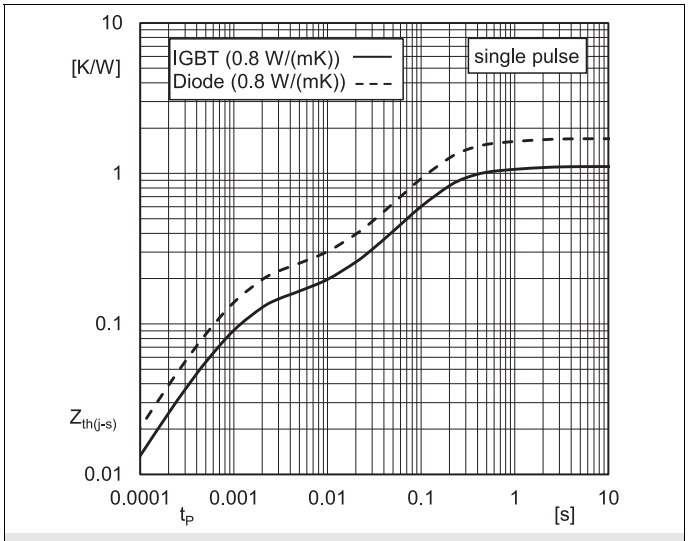


Fig. 9: Typ. transient thermal impedance

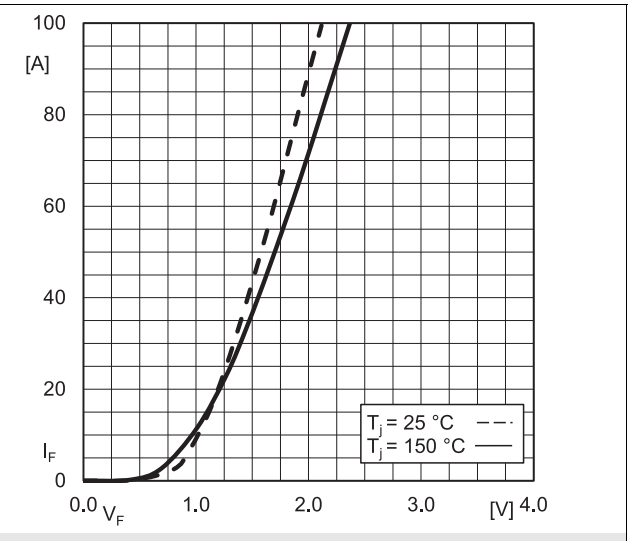
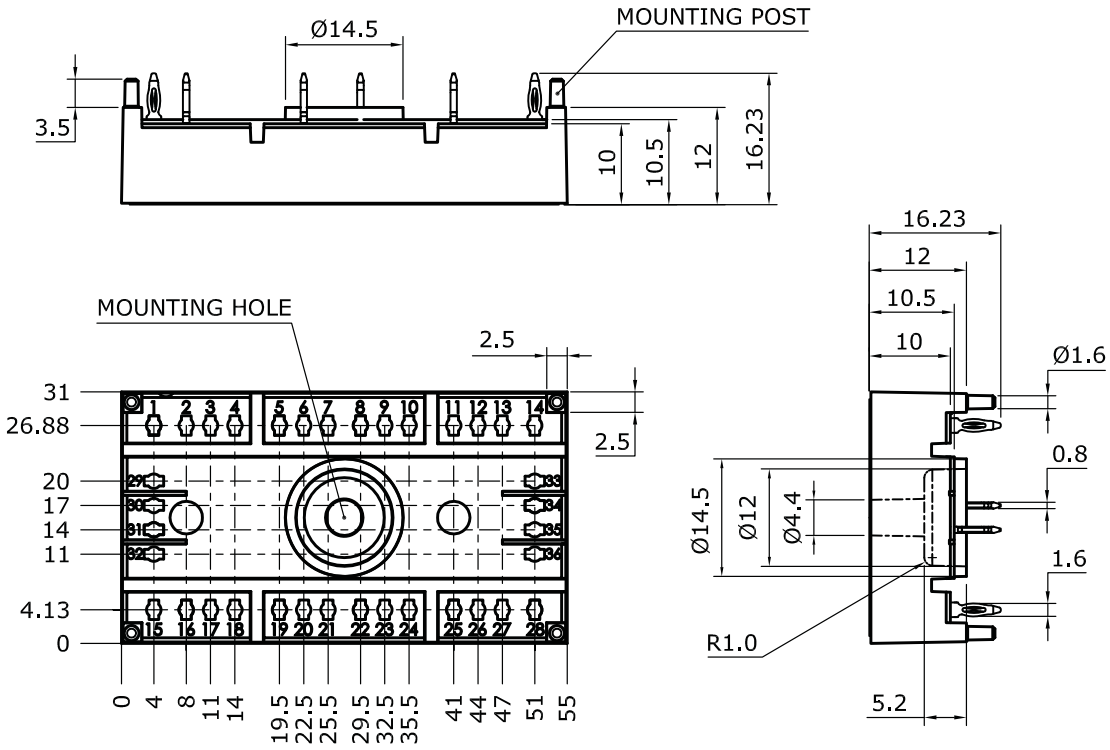


Fig. 10: Typ. CAL diode forward charact., incl. $R_{CC'+EE'}$

Dimensions: mm
Tolerance system: ISO 2768-m



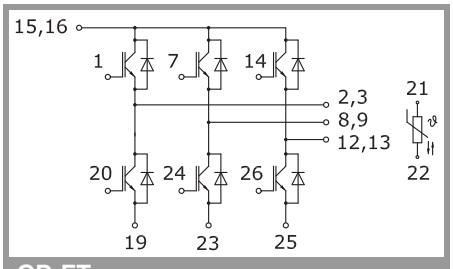
Suggested drilled hole diameter for terminal pins in the circuit board:

- 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

SEMITOP 3 Press-Fit



GD-ET

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

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