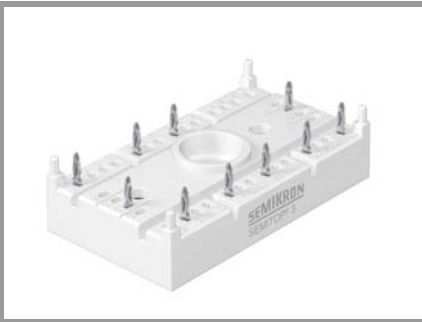


SK50GD066ETp



SEMITOP® 3 Press-Fit

Sixpack Open Emitter

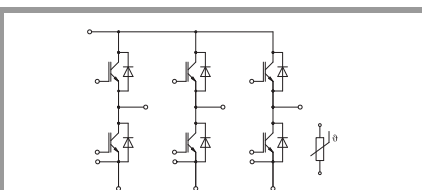
SK50GD066ETp

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

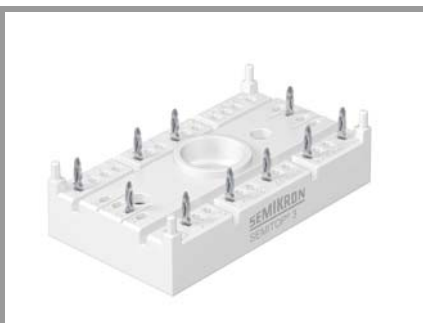


GD-ET

Absolute Maximum Ratings				
Symbol	Conditions	Values	Unit	
IGBT 1				
V_{CES}	$T_j = 25\text{ °C}$	600	V	
I_C	$T_j = 150\text{ °C}$	$T_s = 25\text{ °C}$	53	A
		$T_s = 70\text{ °C}$	39	A
I_C	$T_j = 175\text{ °C}$	$T_s = 25\text{ °C}$	59	A
		$T_s = 70\text{ °C}$	47	A
I_{Chom}		50	A	
I_{CRM}		100	A	
V_{GES}		-20 ... 20	V	
t_{psc}	$V_{CC} = 360\text{ V}$ $V_{GE} \leq 15\text{ V}$ $V_{CES} \leq 600\text{ V}$	$T_j = 150\text{ °C}$	6	μs
T_j		-40 ... 175	$^{\circ}\text{C}$	

Absolute Maximum Ratings				
Symbol	Conditions	Values	Unit	
Diode 1				
V_{RRM}	$T_j = 25\text{ °C}$	600	V	
I_F	$T_j = 150\text{ °C}$	$T_s = 25\text{ °C}$	46	A
		$T_s = 70\text{ °C}$	34	A
I_F	$T_j = 175\text{ °C}$	$T_s = 25\text{ °C}$	52	A
		$T_s = 70\text{ °C}$	41	A
I_{FRM}		100	A	
I_{FSM}	10 ms, sin 180°, $T_j = 150\text{ °C}$	320	A	
T_j		-40 ... 175	$^{\circ}\text{C}$	

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	$^{\circ}\text{C}$
V_{isol}	AC, sinusoidal, $t = 1\text{ min}$	2500	V



SEMIPACK® 3 Press-Fit

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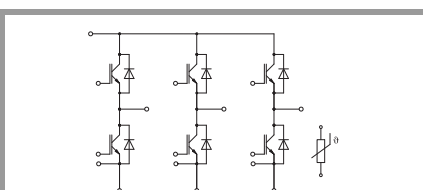
SK50GD066ETp

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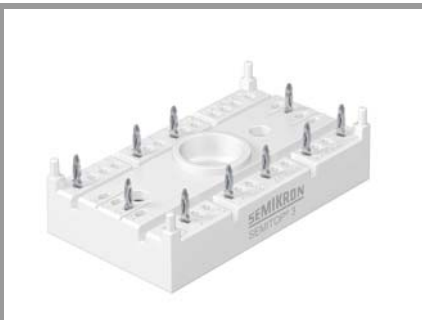


GD-ET

Characteristics			min.	typ.	max.	Unit
Symbol	Conditions					
IGBT 1						
$V_{CE(sat)}$	$I_C = 50\text{ A}$ $V_{GE} = 15\text{ V}$ chipllevel	$T_j = 25\text{ °C}$		1.45	1.85	V
		$T_j = 150\text{ °C}$		1.65	2.05	V
V_{CE0}	chipllevel	$T_j = 25\text{ °C}$		0.90	1.10	V
		$T_j = 150\text{ °C}$		0.80	1.00	V
r_{CE}	$V_{GE} = 15\text{ V}$ chipllevel	$T_j = 25\text{ °C}$		11	15	mΩ
		$T_j = 150\text{ °C}$		17	21	mΩ
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 0.8\text{ mA}$		5	5.8	6.5	V
I_{CES}	$V_{GE} = 0\text{ V}$ $V_{CE} = 600\text{ V}$	$T_j = 25\text{ °C}$			0.05	mA
				-		mA
C_{ies}	$V_{CE} = 25\text{ V}$ $V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$		3.14		nF
C_{oes}		$f = 1\text{ MHz}$		0.2		nF
C_{res}		$f = 1\text{ MHz}$		0.093		nF
Q_G	$V_{GE} = -8\text{ V...}+15\text{ V}$			250		nC
R_{Gint}	$T_j = 25\text{ °C}$			0		Ω
$t_{d(on)}$	$V_{CC} = 300\text{ V}$	$T_j = 150\text{ °C}$		28		ns
t_r	$I_C = 50\text{ A}$	$T_j = 150\text{ °C}$		32		ns
E_{on}	$V_{GE\ neg} = -7\text{ V}$ $V_{GE\ pos} = 15\text{ V}$	$T_j = 150\text{ °C}$		2.2		mJ
$t_{d(off)}$	$R_{G\ on} = 16\text{ Ω}$	$T_j = 150\text{ °C}$		301		ns
t_f	$R_{G\ off} = 16\text{ Ω}$	$T_j = 150\text{ °C}$		45		ns
E_{off}	$di/dt_{on} = 2438\text{ A/μs}$ $di/dt_{off} = 2438\text{ A/μs}$	$T_j = 150\text{ °C}$		1.73		mJ
$R_{th(j-s)}$	per IGBT, $\lambda_{paste}=0.8\text{ W/(mK)}$			1.11		K/W

Characteristics			min.	typ.	max.	Unit
Symbol	Conditions					
Diode 1						
V_F	$I_F = 50\text{ A}$ chipllevel	$T_j = 25\text{ °C}$		1.47	1.87	V
		$T_j = 150\text{ °C}$		1.50	1.78	V
V_{F0}	chipllevel	$T_j = 25\text{ °C}$		0.99	1.10	V
		$T_j = 150\text{ °C}$		0.80	0.89	V
r_F	chipllevel	$T_j = 25\text{ °C}$		9.6	15	mΩ
		$T_j = 150\text{ °C}$		14	18	mΩ
I_{RRM}	$I_F = 50\text{ A}$	$T_j = 150\text{ °C}$		44		A
Q_{rr}	$di/dt_{off} = 2438\text{ A/μs}$	$T_j = 150\text{ °C}$		4.8		μC
E_{rr}	$V_{GE} = -7\text{ V}$ $V_{CC} = 300\text{ V}$	$T_j = 150\text{ °C}$		0.72		mJ
$R_{th(j-s)}$	per Diode			1.7		K/W

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SEMITOP® 3 Press-Fit

Sixpack Open Emitter

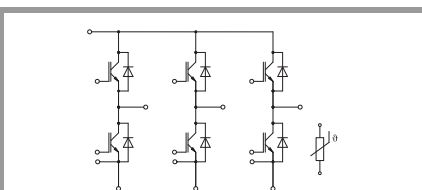
SK50GD066ETp

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Typical Applications

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GD-ET

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

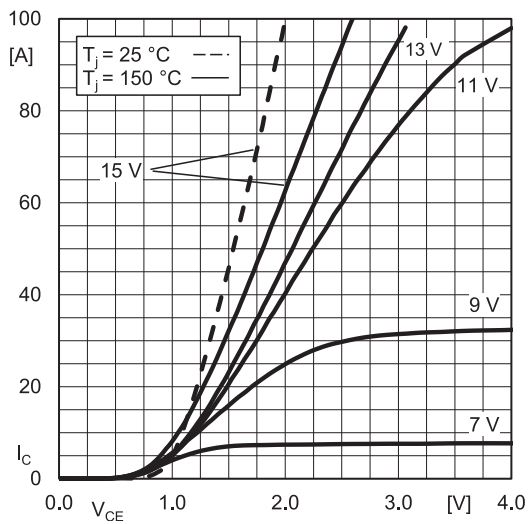


Fig. 1: Typ. output characteristic, inclusive R_{CC+EE}

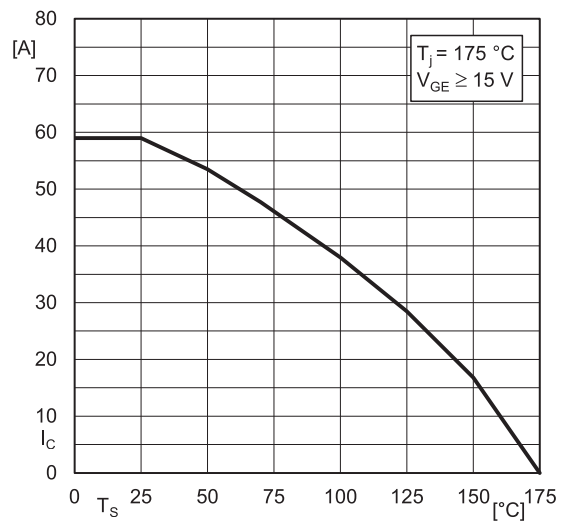


Fig. 2: Typ. rated current vs. temperature $I_C = f(T_s)$

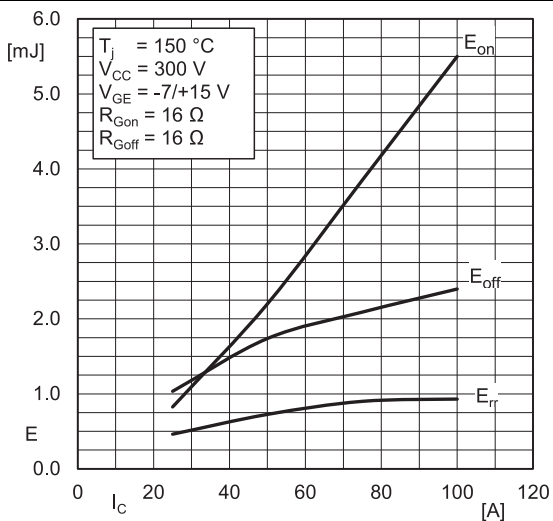


Fig. 3: Typ. turn-on /-off energy = $f(I_C)$

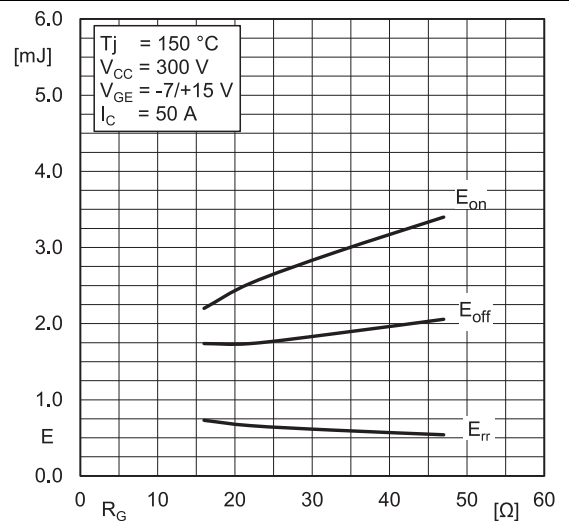


Fig. 4: Typ. turn-on /-off energy = $f(R_G)$

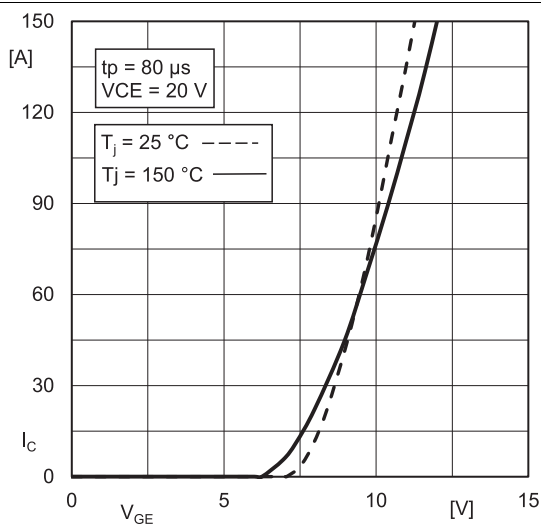


Fig. 5: Typ. IGBT1 transfer characteristic

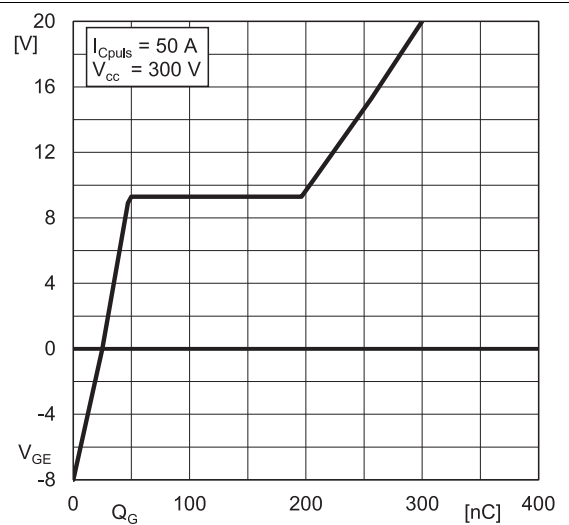


Fig. 6: Typ. gate charge characteristic

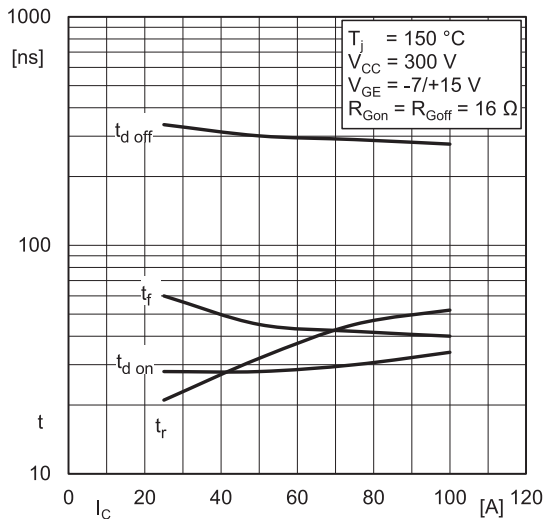


Fig. 7: Typ. switching times vs. I_C

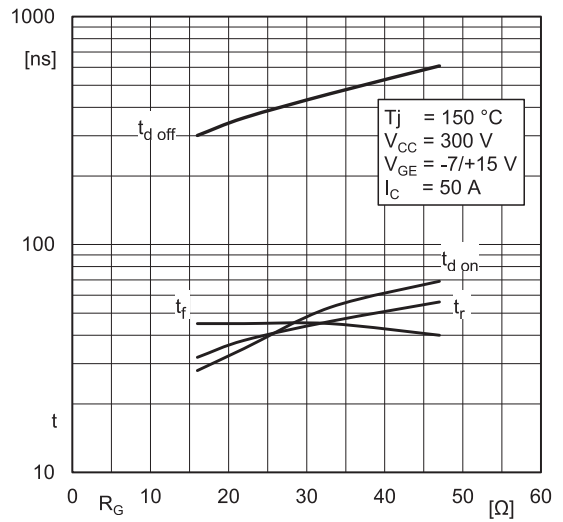


Fig. 8: Typ. switching times vs. gate resistor R_G

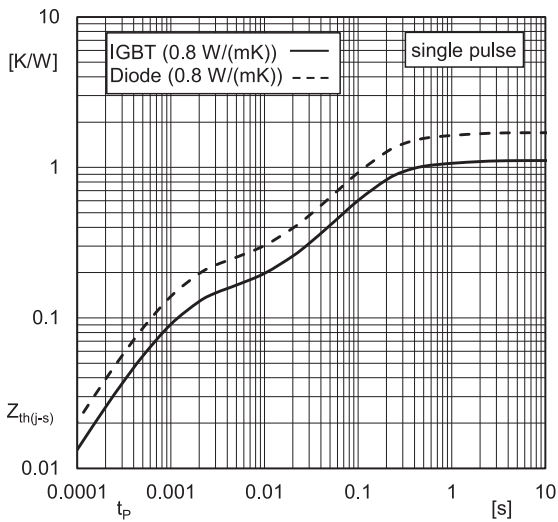


Fig. 9: Typ. transient thermal impedance

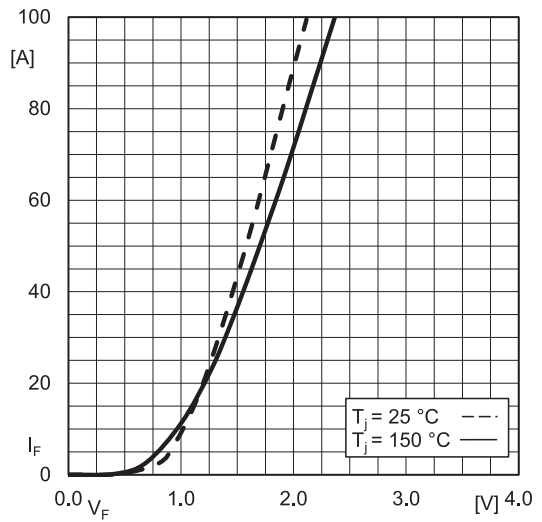
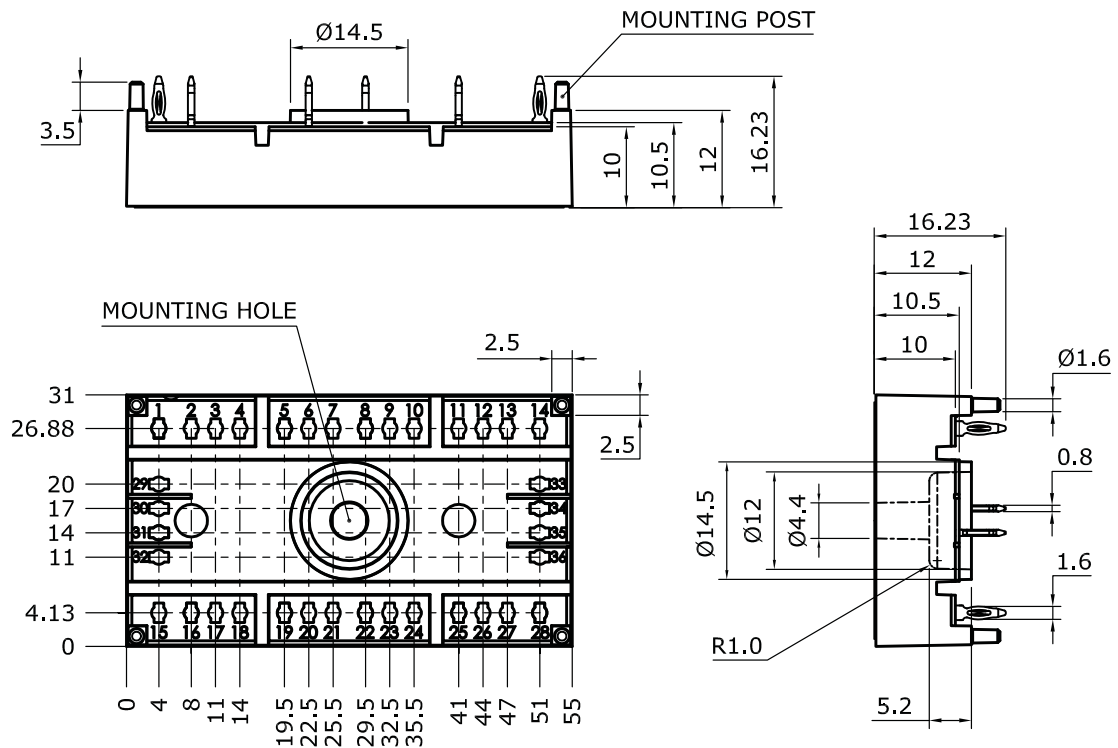


Fig. 10: Typ. CAL diode forward charact., incl. $R_{CC'+EE'}$

SK50GD066ETp

Dimensions: mm

Tolerance system: ISO 2768-m



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

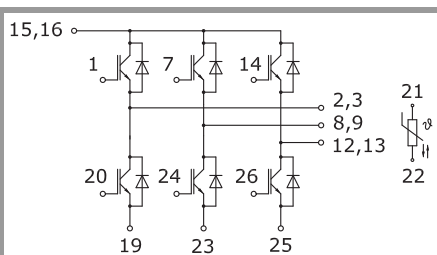
- minimum: 1.575 mm
- typical: 1.6 mm
- maximum: 1.625 mm

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

- 2 mm

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SEMITOP 3 Press-Fit



GD-ET

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

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