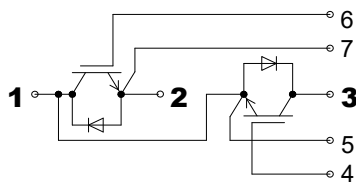


SGG145T120UC1

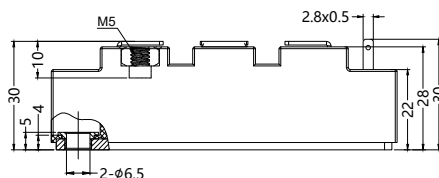
IGBT Modules



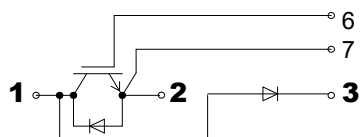
**SGG145T120UC1
(Half Bridge)**



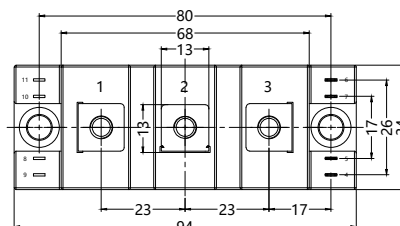
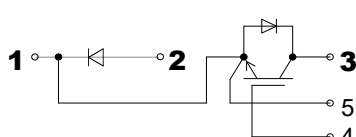
Dimensions in mm (1mm = 0.0394")



**SGD145T120UC1
(Boost Chopper)**



**SDG145T120UC1
(Buck Chopper)**



Absolute Maximum Ratings

$T_C = 25^\circ\text{C}$, unless otherwise specified

Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1200	V
I_C	$T_C = 25(80)^\circ\text{C}$	223(150)	A
I_{CRM}	$T_C = 25^\circ\text{C}, t_p = 1\text{ms}$	450	A
V_{GES}		± 20	V
T_{Vj}		-40...+175	$^\circ\text{C}$
Inverse Diode			
$I_F = -I_C$	$T_C = 25(80)^\circ\text{C}$	223(150)	A
I_{FRM}	$T_C = 25^\circ\text{C}, t_p = 1\text{ms}$	450	A
I_{FSM}	$t_p = 10\text{ms}; \sin.; T_j = 150^\circ\text{C}$	770	A
Module			
$I_{t(RMS)}$	$T_{terminal} = 80^\circ\text{C}$	500	A
T_{stg}		-40~125	$^\circ\text{C}$
V_{Isol}	AC, 1min	4000	V

Features

- Trench Field Stop IGBT4 technology
- Low switching losses
- Switching frequency up to 20kHz
- Square RBSOA, no latch up
- High short circuit capability
- Positive temperature coefficient for easy paralleling
- MOS input, voltage controlled
- Soft switching 4.0 generation FWD diode Technology
- Package with copper base plate
- Isolation voltage 4000V

Application

- AC and DC motor control
- AC servo and robot drives
- power supplies
- welding inverters

Advantages

- space and weight savings
- reduced protection circuits



Sirectifier®

SGG145T120UC1

IGBT Modules

Characteristics

$T_C=25^{\circ}\text{C}$, unless otherwise specified

Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE}=V_{CE}, I_C=6\text{mA}$	5.0	5.8	6.5	V
I_{CES}	$V_{GE}=0; V_{CE}=V_{CES}; T_J=25^{\circ}\text{C}$			2.0	mA
$V_{CE(TO)}$	$T_J=25^{\circ}\text{C}$		0.8	0.9	V
r_{CE}	$V_{GE}=15\text{V}, T_J=25(125)^{\circ}\text{C}$		7.0(10.3)	8.0(11.0)	m Ω
$V_{CE(sat)}$	$I_C=150\text{A}; V_{GE}=15\text{V}; \text{chip level}$		1.90	2.20	V
C_{ies}	under following conditions $V_{GE}=0, V_{CE}=25\text{V}, f=1\text{MHz}$		8.80		nF
C_{oes}			0.58		
C_{res}			0.47		
L_{CE}				20	nH
$R_{CC'+EE'}$	res., terminal-chip $T_C=25(125)^{\circ}\text{C}$		0.25(0.5)		m Ω
$t_{d(on)}$	under following conditions: $V_{CC}=600\text{V}, I_C=150\text{A}$ $R_{Gon}=R_{Goff}=1\Omega,$ $T_J=150^{\circ}\text{C} V_{GE}=\pm 15\text{V}$		175		ns
t_r			38		ns
$t_{d(off)}$			400		ns
t_f			78		ns
$E_{on}(E_{off})$			18(14.2)		mJ
Inverse Diode under following conditions:					
$V_F = V_{EC}$	$I_F=150\text{A}; V_{GE}=0\text{V}; T_J=25^{\circ}\text{C}$		2.18	2.50	V
$V_{(FO)}$	$T_J=25(150)^{\circ}\text{C}$		1.3(0.95)	1.5(1.1)	V
r_F	$T_J=25(150)^{\circ}\text{C}$		5.8(8.0)	6.4(8.8)	m Ω
I_{RRM}	$I_F=150\text{A}; T_J=150^{\circ}\text{C}$		116		A
Q_{rr}	$di/dt=3100\text{A/us}$		26		μC
E_{rr}	$V_{GE}=\pm 15\text{V}$		9		mJ
Thermal Characteristics					
$R_{th(j-c)}$	per IGBT			0.25	K/W
$R_{th(j-c)D}$	per Inverse Diode			0.40	K/W
$R_{th(c-s)}$	per module			0.075	K/W
Mechanical Data					
M_s	to heatsink M5	3		5	Nm
M_t	to terminals M5	2.5		5	Nm
Weight	typical			160	g

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IGBT Modules

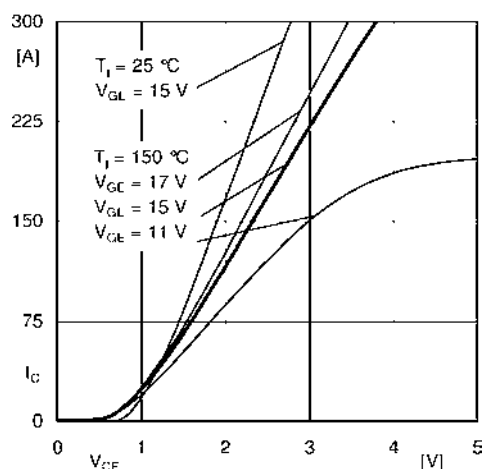


Fig.1:Typ. output characteristic, inclusive RCC'+ EE'

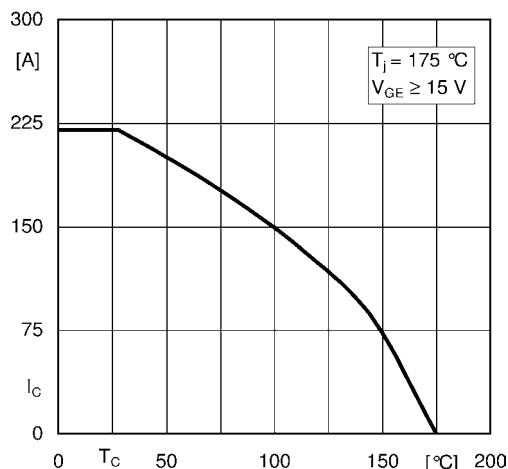


Fig.2: Rated current vs. temperature $I_C=f(T_C)$

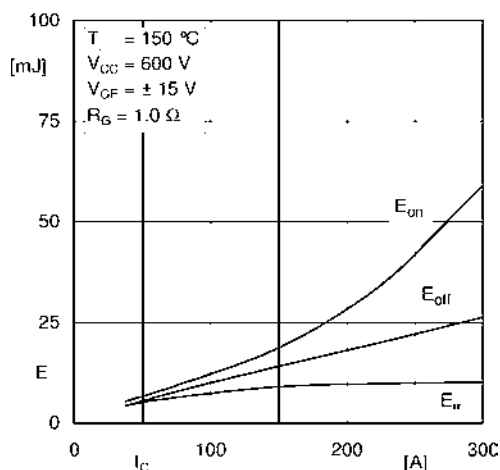


Fig.3:Typ. turn-on /-off energy= $f(I_C)$

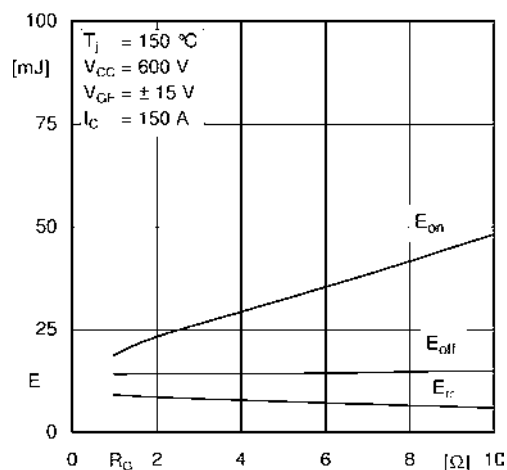


Fig.4:Typ. turn-on /-off energy= $f(R_G)$

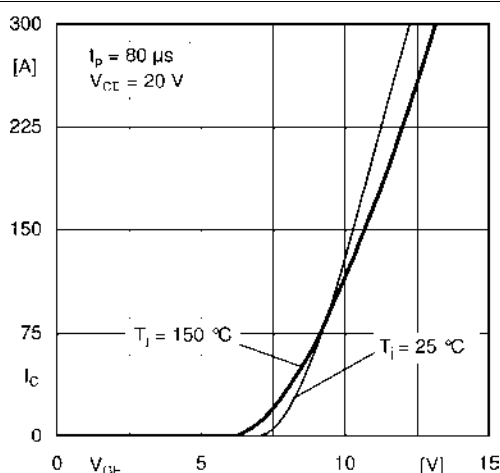


Fig.5: Typ. transfer characteristic

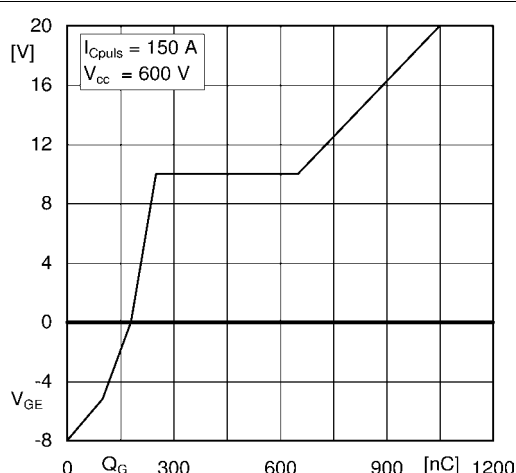


Fig.6: Typ. gate charge characteristic

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IGBT Modules

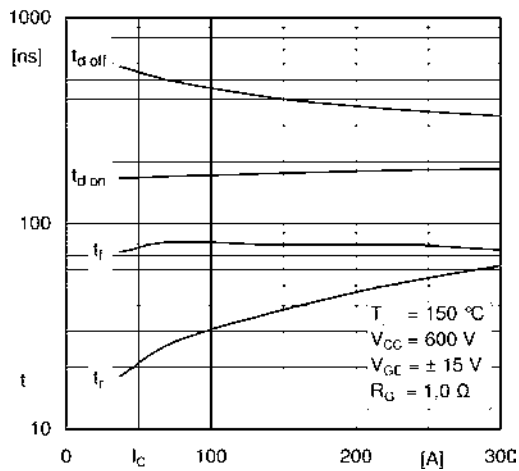


Fig. 7: Typ. switching times vs. I_C

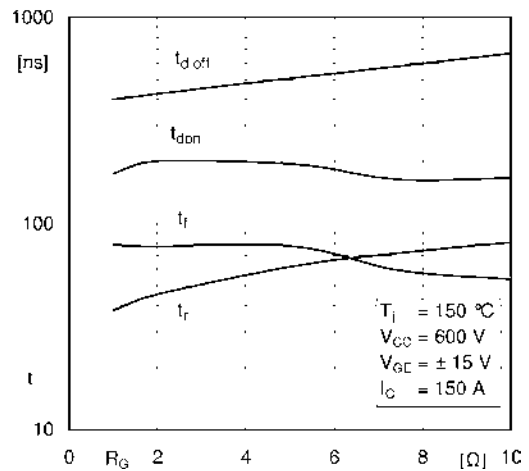


Fig. 8: Typ. switching times vs. gate resistor R_G

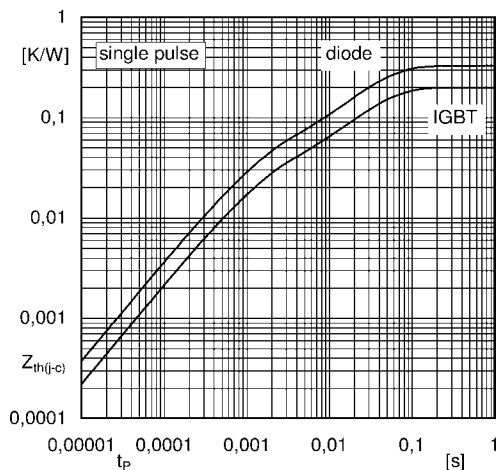


Fig. 9: Transient thermal impedance

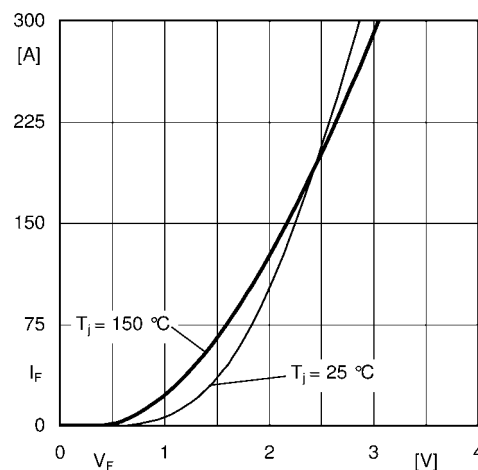


Fig. 10: Typ. FRD diode forward charact., incl. $R_{CC'} + EE'$

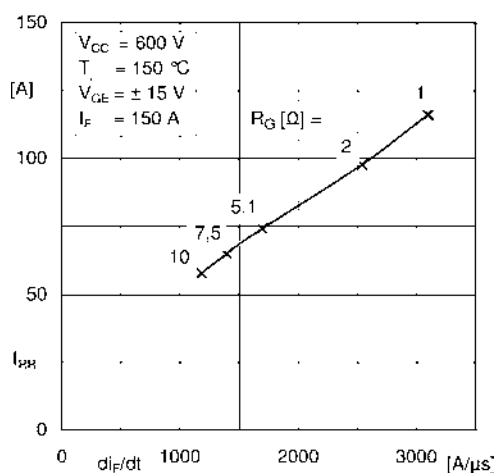


Fig. 11: FRD diode peak reverse recovery current

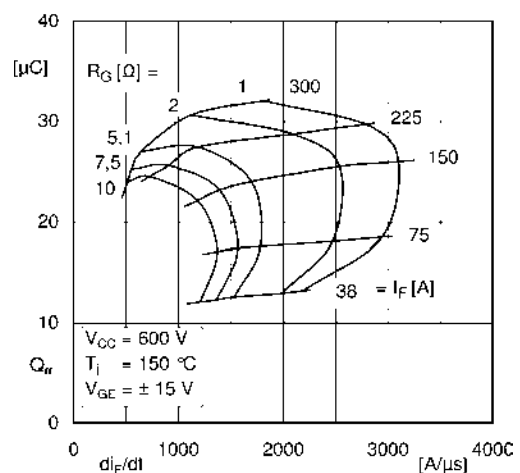


Fig. 12: Typ. FRD diode peak reverse recovery charge