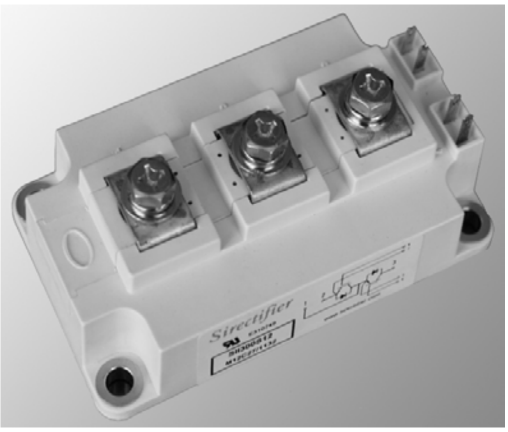
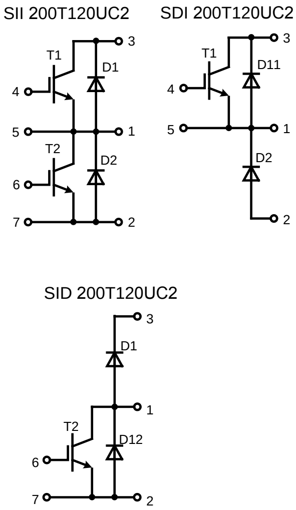
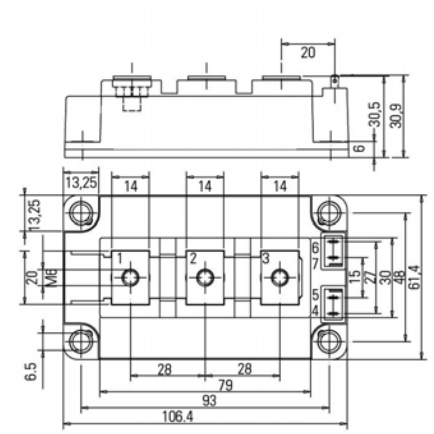
SII/SID /SDI 200T120UC2

IGBT Modules





Dimensions in mm (1mm = 0.0394")



T_C = 25^{o}C, unless otherwise specified

Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1200	V
I_C	T_C= 25(80)^{o}C	314(242)	A
I_{CRM}	T_C= 25^{o}C, t_P =1ms	600	A
V_{GES}		±20	V
T_{Vj},(T_{stg})	$T_{OPERATION} \leq T_{stg}$	–40...+175(125)	^{o}C
V_{isol}	AC, 1min	4000	V
Inverse Diode			
I_F = -I_C	T_C= 25(80)^{o}C	229(172)	A
I_{FRM}	T_C= 25(80)^{o}C, t_P =1ms	600	A
I_{FSM}	t_P =10ms; sin.;T_j=150^{o}C	990	A
Freewheeling	diode		
I_F = -I_C	T_C= 25(80)^{o}C	229(172)	A
I_{FRM}	T_C= 25(80)^{o}C, t_P =1ms	600	A
I_{FSM}	t_P =10ms; sin.;T_j=150^{o}C	990	A

Features

- Trench IGBT technology
- Low switching losses
- Switching frequency up to 30 kHz
- Square RBSOA, no latch up
- High short circuit capability
- Positive temperature coefficient for easy parallelling
- MOS input, voltage controlled
- Ultra fast free wheeling diodes
- Package with copper base plate
- Isolation voltage 4000 V

Application

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

Advantages

- space and weight savings
- reduced protection circuits

Sirectifier®

SII/SID /SDI 200T120UC2

IGBT Modules

Characteristics T_C = 25°C, unless otherwise specified

Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}$, I_C =8mA	5.0	5.8	6.5	V
I_{CES}	V_{GE} = 0; $V_{CE} = V_{CES}$; T_j = 25(125)°C		0.1	0.3	mA
$V_{CE(TO)}$	T_j = 25°C		0.8	0.9	V
r_{CE}	V_{GE} = 15V, T_j = 25(150°C)		5.0(7.5)	5.8(8.0)	mΩ
$V_{CE(sat)}$	I_C =200A; V_{GE} = 15V; chip level		1.80	2.05	V
C_{ies}	under following conditions		12.3		
C_{oes}	V_{GE} = 0, V_{CE} = 25V, f = 1MHz		0.81		nF
C_{res}			0.69		
L_{CE}				20	nH
$R_{CC'+EE'}$	res., terminal-chip T_C = 25(125)°C		0.25(0.5)		mΩ
	under following conditions:				
$t_{d(on)}$	V_{CC} = 600V, I_C = 200A		185		ns
t_r	$R_{Gon} = R_{Goff}$ = 5 Ω, T_j = 150°C		40		ns
$t_{d(off)}$	V_{GE} = ± 15V		425		ns
t_f			82		ns
$E_{on}(E_{off})$			21(20)		mJ
Inverse Diode	under following conditions:				
$V_F = V_{EC}$	I_F =200A; V_{GE} = 0V; T_j = 25(150)°C		2.20(2.15)	2.52(2.47)	V
$V_{(FO)}$	T_j = 25(150)°C		1.30(0.90)	1.50(1.10)	V
r_F	T_j = 25(150)°C		4.5(6.3)	5.1(6.8)	mΩ
I_{RRM}	I_F = 200A; T_j = 150°C		174		A
Q_{rr}	di/dt = 4450A/us		33		uC
E_{rr}	V_{GE} = 15V		13		mJ
FWD	under following conditions:				
$V_F = V_{EC}$	I_F = 200A; V_{GE} = 0V; T_j = 25(150)°C		2.20(2.15)	2.52(2.47)	V
$V_{(FO}$	T_j = 25(150)℃		1.30(0.90)	1.50(1.10)	V
r_F	T_j = 25(150)°C		4.5(6.3)	5.1(6.8)	mΩ
I_{RRM}	I_F = 200A; T_j = 25(150)°C		174		A
Q_{rr}	di/dt = 4450A/us		33		uC
E_{rr}	V_{GE} =15V		13		mJ
Thermal Characteristics					
$R_{th(j-c)}$	per IGBT			0.14	K/W
$R_{th(j-c)D}$	per Inverse Diode			0.26	K/W
$R_{th(c-s)}$	per module			0.038	K/W
Mechanical Data					
M_s	to heatsink M6	3		5	Nm
M_t	to terminals M6	2.5		5	Nm
Weight	typical			325	g

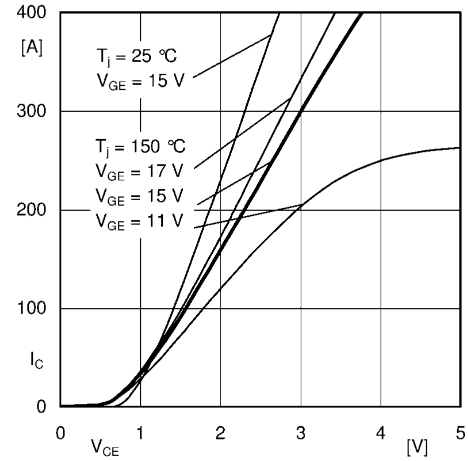


Fig. 1: Typ. output characteristic, inclusive $R_{CC'+EE'}$

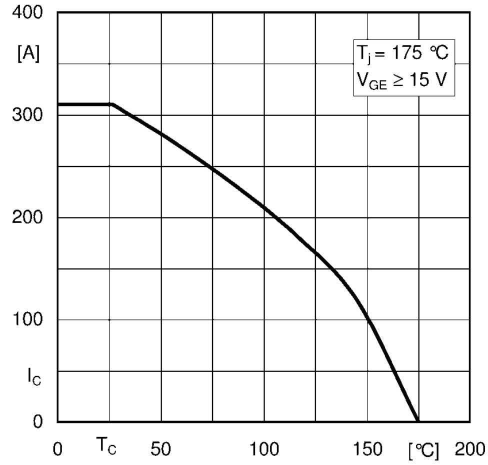


Fig. 2: Rated current vs. temperature $I_C = f(T_C)$

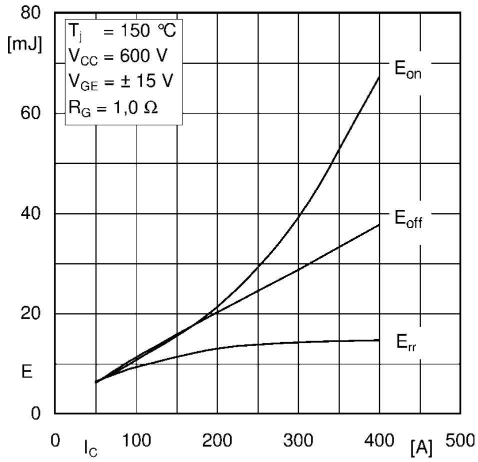


Fig. 3: Typ. turn-on /-off energy = f (I_C)

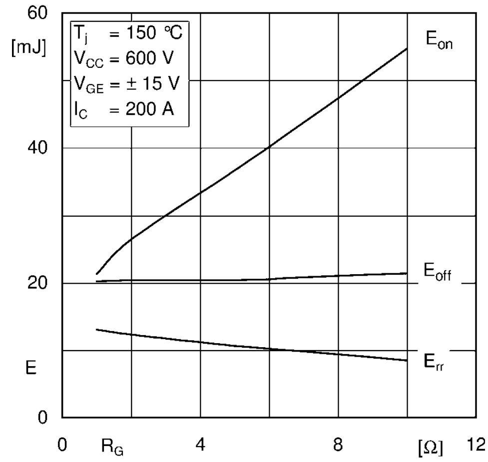


Fig. 4: Typ. turn-on /-off energy = f (R_G)

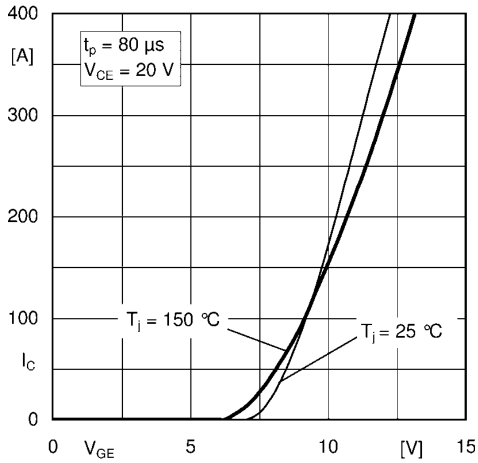


Fig. 5: Typ. transfer characteristic

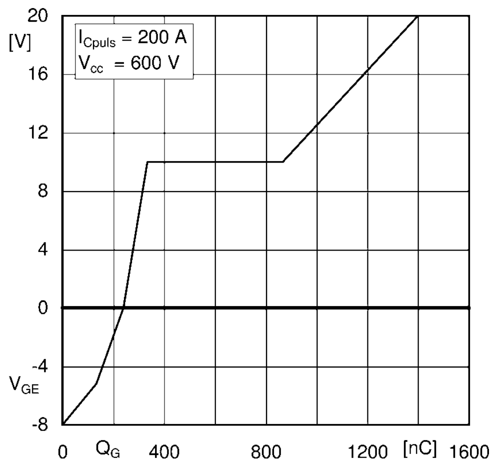


Fig. 6: Typ. gate charge characteristic

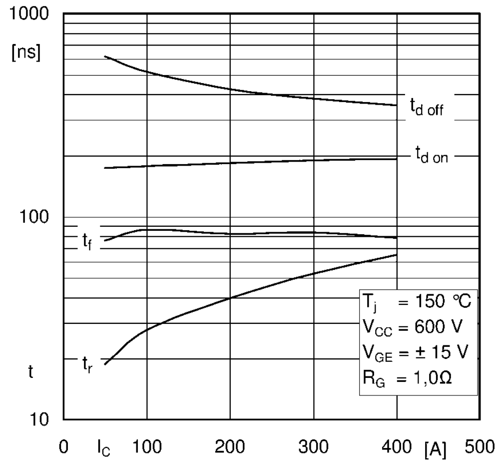


Fig. 7: Typ. switching times vs. I_C

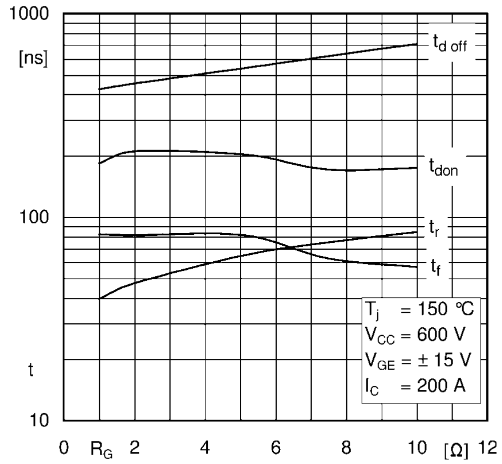


Fig. 8: Typ. switching times vs. gate resistor R_G

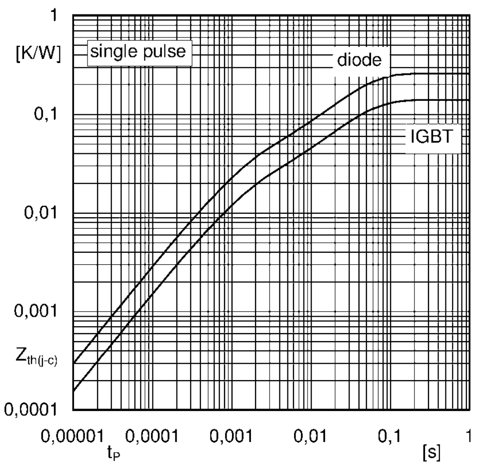


Fig. 9: Transient thermal impedance

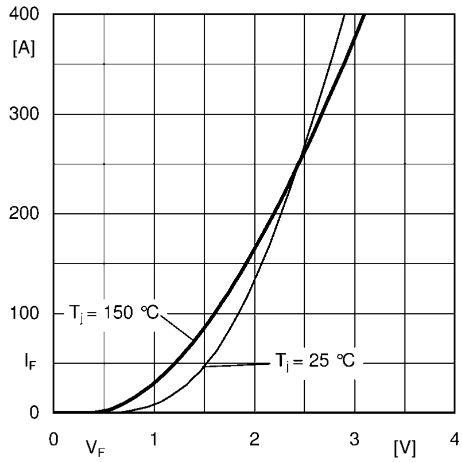


Fig. 10: FWD diode forward characteristic

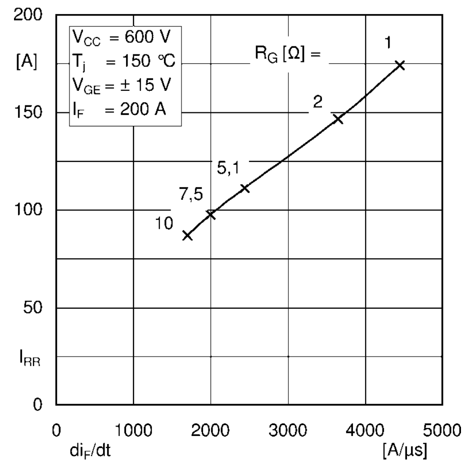


Fig. 11: FWD diode peak reverse recovery current

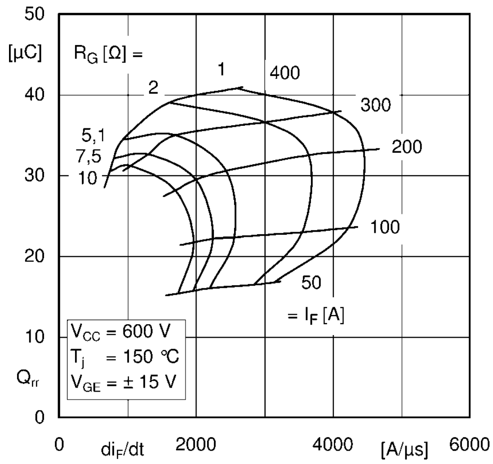


Fig. 12: Typ. FWD diode peak reverse recovery charge

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