

TECHNICAL DATA
DATA SHEET 994, REV. B
Formerly part number SHDG1024

600 VOLT, 40 AMP IGBT DEVICE
HIGH SPEED, IMPROVED SCSOA
WITH FAST REVERSE RECOVERY DIODE

ELECTRICAL CHARACTERISTICS

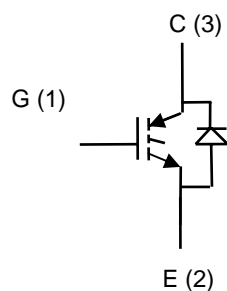
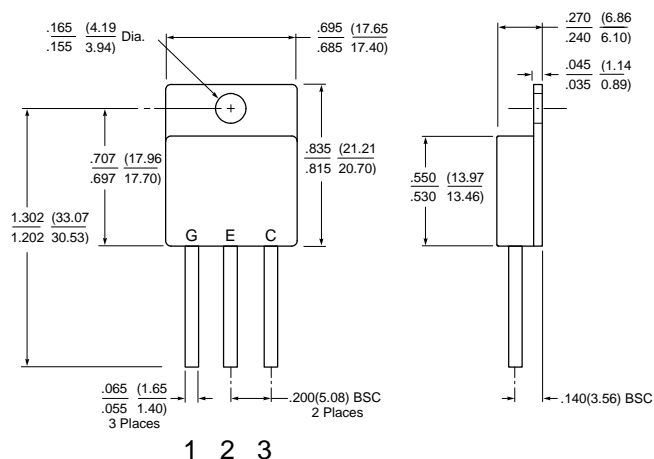
(T_J=25°C UNLESS OTHERWISE SPECIFIED)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
IGBT SPECIFICATIONS					
Collector to Emitter Breakdown Voltage I _C = 250 μA, V _{GE} = 0V	BV _{CES}	600	-	-	V
Continuous Collector Current T _C = 25 °C T _C = 90 °C	I _C	-	-	40 ⁽¹⁾ 40	A
Pulsed Collector Current, 1mS	I _{CM}	-	-	130	A
Short Circuit time, V _{GE} = 15V, V _{CE} = 500V, T _J = 125 °C di/dt < 300 A/μsec, I _C < 300A	t _{sc}	-	-	10	μsec
Gate to Emitter Voltage	V _{GE}	-	-	+/-20	V
Gate-Emitter Leakage Current, V _{GE} = +/-20V	I _{GES}	-	-	+/- 100	nA
Gate Threshold Voltage, I _C =2mA	V _{GE(TH)}	4.0	-	7.0	V
Zero Gate Voltage Collector Current V _{CE} = 600 V, V _{GE} =0V T _J =25°C V _{CE} = 480 V, V _{GE} =0V T _J =125°C	I _{CES}	- -	- -	0.25 3.0	Ma mA
Collector to Emitter Saturation Voltage, I _C = 40A, V _{GE} = 15V, T _C = 25 °C T _C = 125 °C	V _{CE(SAT)}	-	2.0 2.3	2.3 2.5	V
Input Capacitance Output Capacitance Reverse Transfer Cap. V _{CE} = 25 V, V _{GE} = 0 V, f = 1 MHz	C _{ies} C _{oes} C _{res}	-	2800 300 200	-	pF
Turn On Delay Time Rise Time Turn Off Delay Time Fall Time Turn off Energy Loss (T _J = 125 °C, I _C = 40A, V _{GE} = 15V, inductive load, V _{CC} = 300 V, R _G = 22 Ω	t _{d(on)} t _r t _{d(off)} t _f E _{off} E _{on}	- - - -	100 50 300 40 1.5 2.0	- - - -	nsec mJ mJ
Maximum Thermal Resistance	R _{θJC}	-	-	0.60	°C/W

TECHNICAL DATA
DATA SHEET 994, REV. B
ULTRAFAST DIODE RATING AND CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Diode Peak Inverse Voltage	PIV	600	-	-	V
Continuous Forward Current, $T_C = 25\text{ }^\circ\text{C}$ $T_C = 90\text{ }^\circ\text{C}$	I_F	-	-	40 ⁽²⁾ 40 ⁽³⁾	A
Forward Surge Current, $t_p = 10\text{ msec}$	I_{FSM}	-	-	300	A
Diode Forward Voltage, $I_F = 40\text{A}$	V_F	-	1.5	1.8	V
Diode Reverse Recovery Time	t_{rr}	-	160	180	nsec
Diode Reverse Recovery Charge ($I_F=30\text{A}$, $V_{RR}=200\text{V}$, $di/dt=200\text{ A}/\mu\text{s}$)	Q_{rr}	-	-	1.2	μC
Maximum Thermal Resistance	$R_{\theta JC}$	-	-	0.85	$^\circ\text{C}/\text{W}$
Maximum and Storage Junction Temperature	T_{jmax}	-55	-	150	$^\circ\text{C}$

- (1) Current is limited by package leads. Die current rating is 65A.
(2) Current is limited by package leads. Die current rating is 75A.
(3) Current is limited by package leads. Die current rating is 50A.

Schematic Diagram:

Package Drawing:
(TO258)


**TECHNICAL DATA
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