



Solid State Devices, Inc.

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Designer's Data Sheet

FEATURES:

- Power Dissipation 1 kW @ 25°C Case
- Extremely Large SOA
- Ultra Fast Switching, $t_s = 100$ ns typical (Outperforms IGBT)
- OFHC Copper Package
- Ideal for Motor Control/Power Systems
- Extremely Low $R_{\theta JC}$: 0.1°C/W
- Can Be Driven From Low Level Logic
- Higher Current and Voltages Available. Consult Factory
- Alternate Packages Available. Consult Factory.
- TX, TX-V, and S-Level Screening Available. Consult Factory.

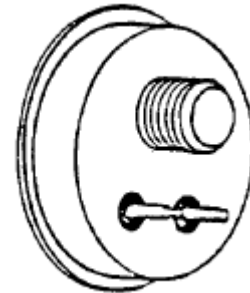
SHA489

IGBT REPLACEMENT ULTRA FAST SWITCHING DEVICE

200 Amps

250 Volts

1000 Watts



MAXIMUM RATINGS	Symbol	Value	Units
Output Voltage (Collector – Emitter)	V_{3-1}	250	V
Out/In Isolation (Collector – Gate)	V_{3-2}	250	V
Input Voltage (Gate – Emitter)	V_{2-1}	±20	V
Current Sink Capabilities (peak)	I_3	200	A
Input Current (transistor switched off)*	I_2	-5	A
Total Device Power Dissipation @ $T_c = 25^\circ\text{C}$ Derate above 75°C	P_D	1000 8	W W/°C
Storage Temperature	T_{stg}	-55 to +150°C	°C

THERMAL CHARACTERISTICS	Symbol	Value	Units
Thermal Resistance (Junction – Case) Power Section	$R_{\theta JC}$	0.1	°C/W

ELECTRICAL CHARACTERISTICS	Symbol	Min	Max	Units
Output Breakdown (Collector – Emitter) ($I_3 = 10$ mA, $V_{2-1} = -4$ V)	BV_{3-1}	250	—	Volts
Out/In Isolation (Collector – Gate) ($I_3 = 300$ μA , $I_1 = 0$ V)	BV_{3-2}	250	—	Volts
Input Breakdown Voltage ($I_1 = -100$ μA , $I_3 = 0$ V) ($I_1 = 100$ μA , $I_3 = 0$ V)	BV_{2-1}	19 -8	22 —	Volts
Output Leakage Current ($V_{2-1} = -4$ V, $V_{3-1} \leq 250$ V)	I_3	—	5	mA

NOTE: All specifications are subject to change without notification. SCD's for these devices should be reviewed by SSDI prior to release.

DATA SHEET #: PM0020A

DOC



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SDA489

ELECTRICAL CHARACTERISTICS		Symbol	Min	Max	Units	
Saturation Voltage	$(I_3 = 100 \text{ A}_{DC}, V_{2-1} = 12 \text{ V})^*$	$V_{3-1} \text{ (SAT)}$	—	3.2	Volts	
	$(I_3 = 200 \text{ A}_{DC}, V_{2-1} = 12 \text{ V})$		—	7.0		
	$(I_3 = -100 \text{ A}_{DC}, V_{2-1} = -4 \text{ V})^*$		—	1.6		
Output Reverse Recovery	$(I_F = I_3 = 0.5 \text{ A}, I_R = I_3 = -1 \text{ A}, \text{ to } I_{RR} = I_3 = 0.25 \text{ A})$	t_{rr}	—	70	ns	
Capacitance	Output $(V_{3-1} = 10 \text{ V}, V_{2-1} = -4 \text{ V})$	C_{3-1}	—	5000	pF	
	Input $(V_{3-1} = 0 \text{ V}, V_{2-1} = 0 \text{ V})$	C_{2-1}	—	5000		
SOA	$(I_3 = 100 \text{ A}_{DC}, V_{2-1} = 12 \text{ V})$		—	1	sec	
No Heatsink	$(I_3 = 60 \text{ A}_{DC}, V_{2-1} = 12 \text{ V})$		—	6		
On Time	$V_{3-1} = 100 \text{ V}_{DC}, I_3 = 10 \text{ A}$ Load Limited, V_{2-1} adjusted for 20 A I_3 without load = $(I_{B1}), I_2 = (I_{B2}) = 2 \text{ A}$	$t_{(on)}$	t_d	—	500	ns
			t_r			
Storage Time		$t_{(off)}$	t_s	—	200	ns
Fall Time			t_f	—	250	ns

NOTES:

* Pulse Test: Pulse Width = 300µsec, Duty Cycle = 2%

1. Maximum forward voltage measured with instantaneous forward pulse of 300 µsec minimum.
2. Unless Otherwise Specified, All Electrical Characteristics @25°C

PACKAGE OUTLINE: SHA489

PHYSICAL DIMENSIONS

SCHEMATIC DRAWING

Available Part Numbers

SHA489

PIN ASSIGNMENT (Standard)			
Package	Collector	Emitter	Gate
SHA489	Pin 3	Pin 1	Pin 2