

**Solid State Devices, Inc.**

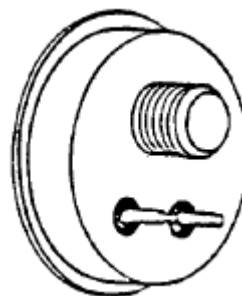
14830 Valley View Blvd * La Mirada, Ca 90638

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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) $(I_3 = 10 \text{ mA}, V_{2-1} = -4 \text{ V})$	BV_{3-1}	250	—	Volts
Out/In Isolation (Collector – Gate) $(I_3 = 300 \mu\text{A}, I_1 = 0 \text{ V})$	BV_{3-2}	250	—	Volts
Input Breakdown Voltage $(I_1 = -100 \mu\text{A}, I_3 = 0 \text{ V})$ $(I_1 = 100 \mu\text{A}, I_3 = 0 \text{ V})$	BV_{2-1}	19 -8	22 —	Volts
Output Leakage Current $(V_{2-1} = -4 \text{ V}, V_{3-1} \leq 250 \text{ V})$	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 (I₃ = 100 A_{DC}, V₂₋₁ = 12 V)* (I₃ = 200 A_{DC}, V₂₋₁ = 12 V) (I₃ = -100 A_{DC}, V₂₋₁ = -4 V)*		V ₃₋₁ (SAT)		—	3.2	Volts
				—	7.0	
				—	1.6	
Output Reverse Recovery (I_F = I₃ = 0.5 A, I_R = I₃ = -1 A, to I_{RR} = I₃ = 0.25 A)		t _{rr}		—	70	ns
Capacitance Output (V₃₋₁ = 10 V, V₂₋₁ = -4 V) Input (V₃₋₁ = 0 V, V₂₋₁ = 0 V)		C ₃₋₁		—	5000	pF
		C ₂₋₁		—	5000	
SOA No Heatsink (I₃ = 100 A_{DC}, V₂₋₁ = 12 V) (I₃ = 60 A_{DC}, V₂₋₁ = 12 V)				—	1	sec
				—	6	
On Time	V ₃₋₁ = 100 V _{DC} , I ₃ = 10 A Load Limited, V ₂₋₁ adjusted for 20 A I ₃ without load = (I _{B1}), I ₂ = (I _{B2}) = 2 A	t _(on)	t _d	—	500	ns
t _r						
Storage Time		t _(off)	t _s	—	200	ns
Fall Time			t _f	—	250	ns

NOTES:

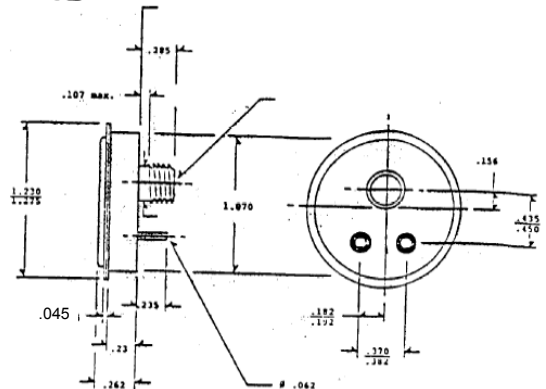
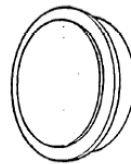
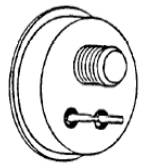
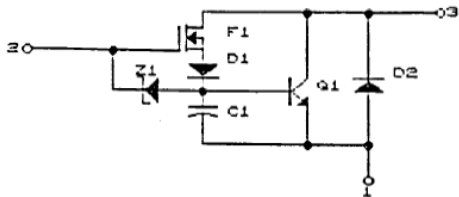
* Pulse Test: Pulse Width = 300 μ sec, Duty Cycle = 2%

1. Maximum forward voltage measured with instantaneous forward pulse of 300 μ sec 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