S8M02600B(LS)

SENSITIVE GATE SILICON CONTROLLED RECTIFIERS REVERSE BLOCKING THYRISTORS

SCRs 8 AMPERES RMS 600 VOLTS

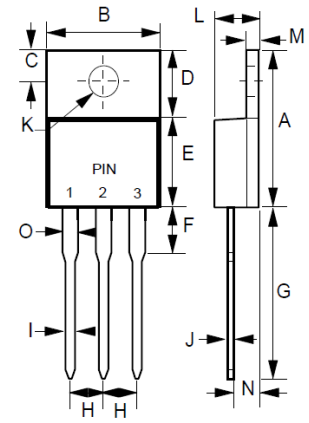
FEATURES

- Blocking Voltage to 600 Volts
- On-State Current Rating of 8 Amperes RMS at 80℃
- High Surge Current Capability - 80 Amperes
- Rugged, Economical TO-220AB Package
- Glass Passivated Junctions for Reliability and Uniformity
- Minimum and Maximum Values of I_{GT}, V_{GT} and I_H Specified for Ease of Design
- Immunity to dv/dt - 5V/ms Minimum at 110℃
- Pb-Free Package
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

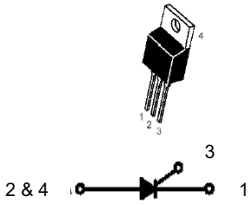
MECHANICAL DATA

- Package: TO-220AB
- Package Material: Molded Plastic
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.07 ounces, 2.0 grams (Approximate)

TO-220AB



TO-220AB		
DIM.	MIN.	MAX.
A	14.22	15.88
B	9.65	10.67
C	2.54	3.43
D	5.84	6.86
E	8.26	9.28
F	-	6.35
G	12.70	14.73
H	2.29	2.79
I	0.51	1.14
J	0.40	0.67
K	3.53 ⌀	4.09 ⌀
L	3.56	4.83
M	1.14	1.40
N	2.03	2.92
O	1.17	1.37
All Dimensions in millimeter		



PIN ASSIGNMENT	
1	Cathode
2	Anode
3	Gate
4	Anode

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (T_J = 25℃ unless otherwise noticed)

ABSOLUTE RATINGS

CHARACTERISTICS	SYMBOL	VALUE	UNIT
Peak Repetitive Off-State Voltage (T_J = -40 to 125℃, Sine Wave, 50 to 60Hz; Gate Open)	V_{DRM} V_{RRM}	600	V
On-State RMS Current (180° Conduction Angles, T_C = 80℃)	$I_{T(RMS)}$	8	A
Peak Non-Repetitive Surge Current (1/2 Cycle, Sine Wave 60Hz, T_J = 25℃)	I_{TSM}	80	A
Circuit Fusing Consideration (t = 8.3ms)	I^2t	26.5	A^2s
Forward Peak Gate Power (Pulse Width ≤ 1.0μs, T_C = 80℃)	P_{GM}	5	W
Forward Average Gate Power (t = 8.3ms, T_C = 80℃)	$P_{G(AV)}$	0.5	W
Forward Peak Gate Current (Pulse Width ≤ 1.0μs, T_C = 80℃)	I_{GM}	2.0	A
Operating Junction Temperature Range	T_J	-40 to +110	°C
Storage Temperature Range	T_{STG}	-40 to +150	°C

Notes:

1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
2. See https://www.diodes.com/quality/lead-free/ for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. V_{DRM} and V_{RRM} for all types can be applied on a continuous basis. Ratings apply for zero or negative gate voltage; positive gate voltage shall not be applied concurrent with negative potential on the anode. Blocking voltages shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded

RATING AND CHARACTERISTIC CURVES
S8M02600B

THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	VALUE	UNIT
Thermal Resistance - Junction to Case - Junction to Ambient	RthJC	2.2	°C/W
	RthJA	62.5	
Maximum Lead Temperature for Soldering Purposes 1/8 from Case for 10 Seconds	T_L	260	°C

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

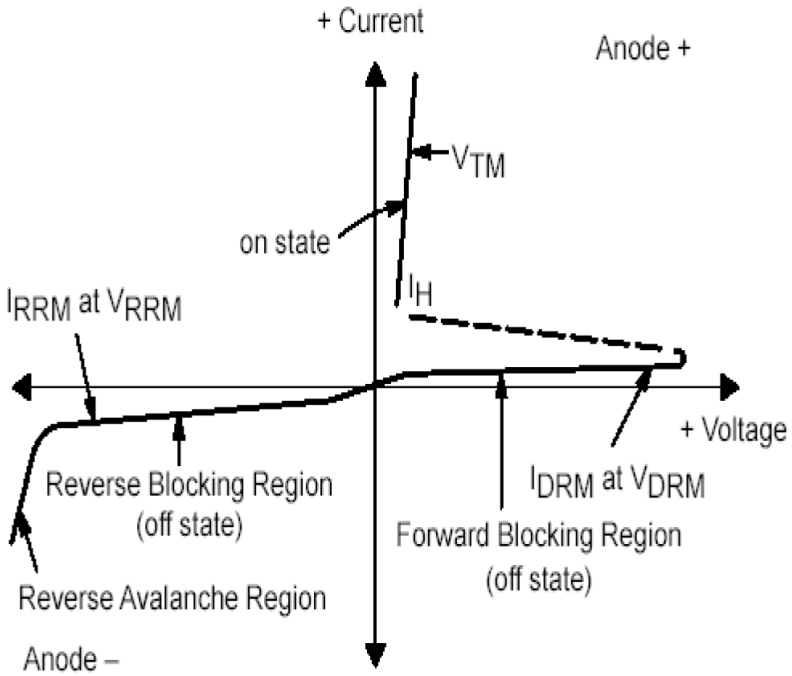
OFF CHARACTERISTICS		SYMBOL	MIN.	TYP.	MAX.	UNIT
Peak Repetitive Forward or Reverse Blocking Current (V_D = Rated V_{DRM} and V_{RRM}; R_{GK} = 1k Ohms)	T_J = 25℃ T_J = 110℃	I_{DRM} I_{RRM}	-- --	-- --	10 500	μA

ON CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Peak Forward On-State Voltage (I_{TM} = 16A Peak @tp ≤ 2.0ms, Duty Cycle ≤ 2%)	V_{TM}	--	--	1.8	V
Gate Trigger Current (V_D = 12V; R_L = 100 Ohms)	I_{GT}	5.0	25	200	μA
Holding Current (V_D = 12V, Gate Open, Initiating Current = 200mA)	I_H	--	0.5	6.0	mA
Latch Current (V_D = 12V, I_G = 200μA)	I_L	--	0.6	8.0	mA
Gate Trigger Voltage (V_D = 12V; R_L =100 Ohms)	V_{GT}	0.3	0.65	1.0	V
Gate Non Trigger Voltage (V_D = 12V; R_L =100 Ohms) T_J = 110℃	V_{GD}	0.2	--	--	V

DYNAMIC CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Critical Rate of Rise of Off-State Voltage (V_D = 67% V_{DRM}, R_{GK} = 1k Ohm, C_{GK} = 1μF, T_J = 110℃)	dv/dt	5.0	--	--	V/μs
Repetitive Critical Rate of Rise of On-State Current I_{PK} = 50A P_W = 40μs, di/dt = 1A/μs, I_{GT} = 10mA	di/dt	--	--	100	A/μs

*Indicates Pulse Test: Pulse Width ≤ 2.0ms, Duty Cycle ≤ 2%.

Symbol	Parameter
V_{DRM}	Peak Repetitive Off State Forward Voltage
I_{DRM}	Peak Forward Blocking Current
V_{RRM}	Peak Repetitive Off State Reverse Voltage
I_{RRM}	Peak Reverse Blocking Current
V_{TM}	Peak On State Voltage
I_H	Holding Current



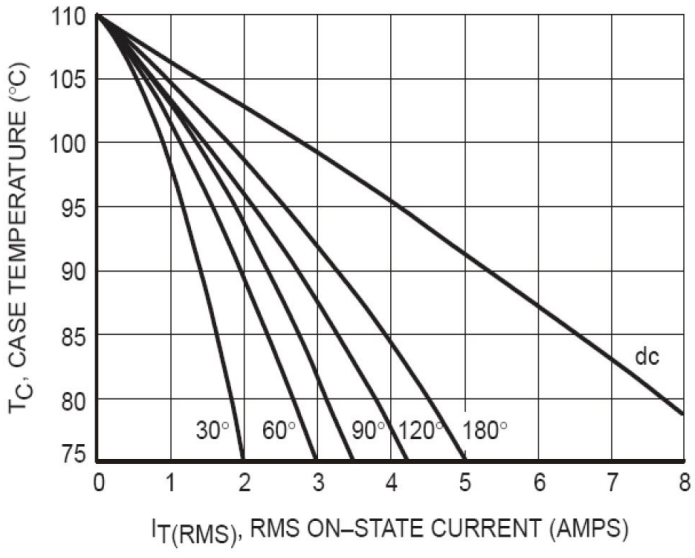


Figure 1. Typical RMS Current Derating

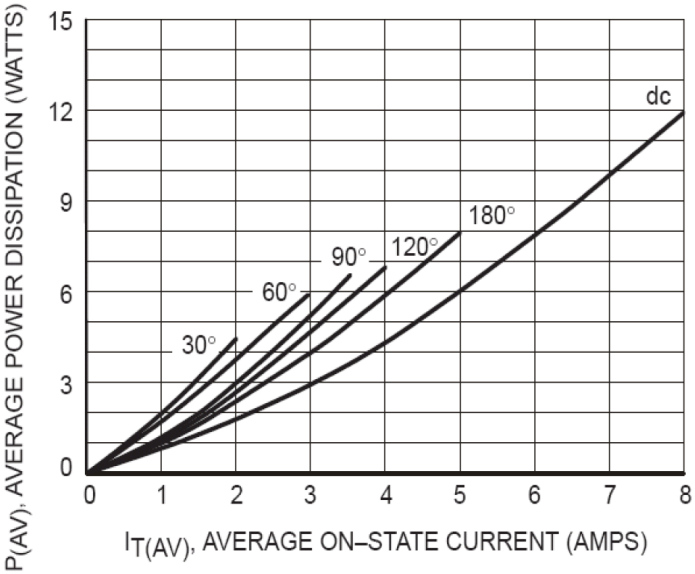


Figure 2. On–State Power Dissipation

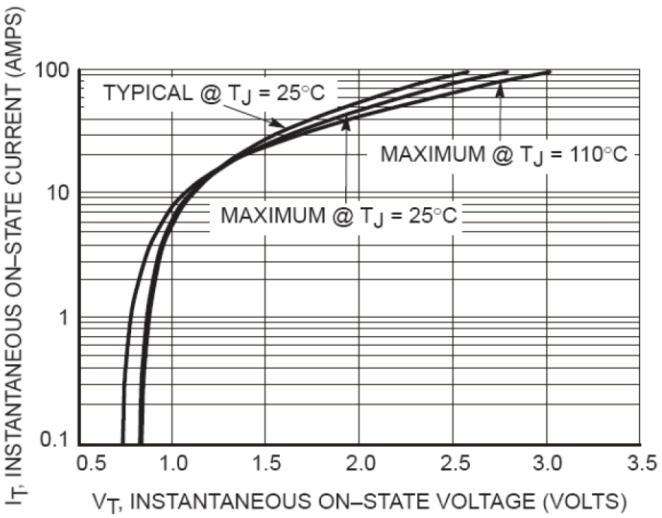


Figure 3. Typical On–State Characteristics

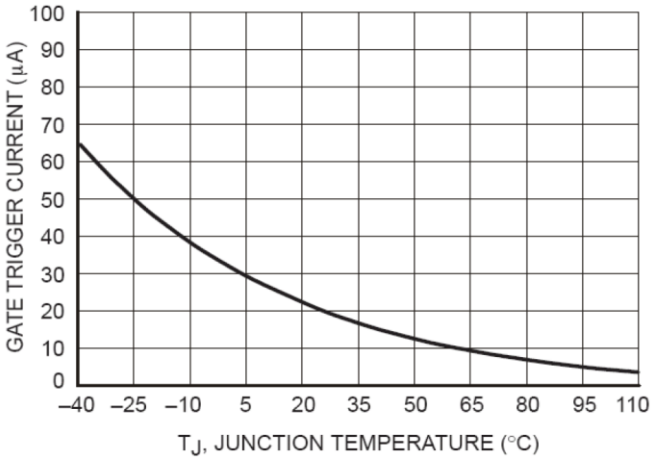


Figure 4. Typical Gate Trigger Current versus Junction Temperature

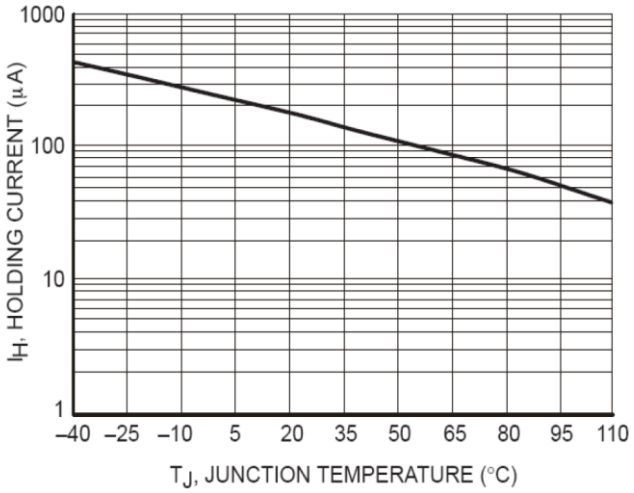


Figure 5. Typical Holding Current versus Junction Temperature

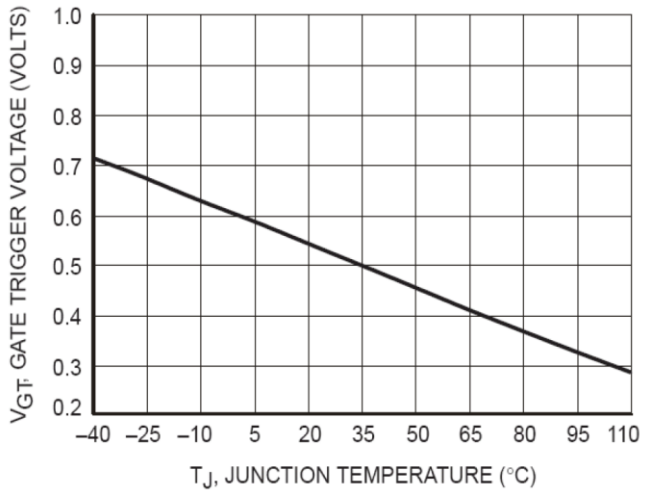


Figure 6. Typical Gate Trigger Voltage versus Junction Temperature

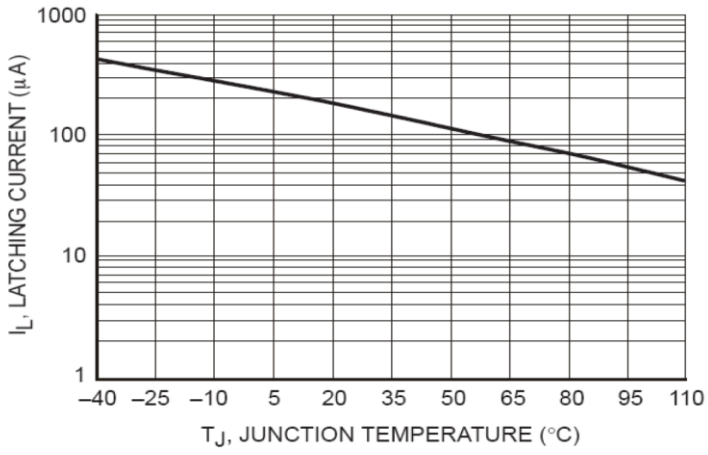
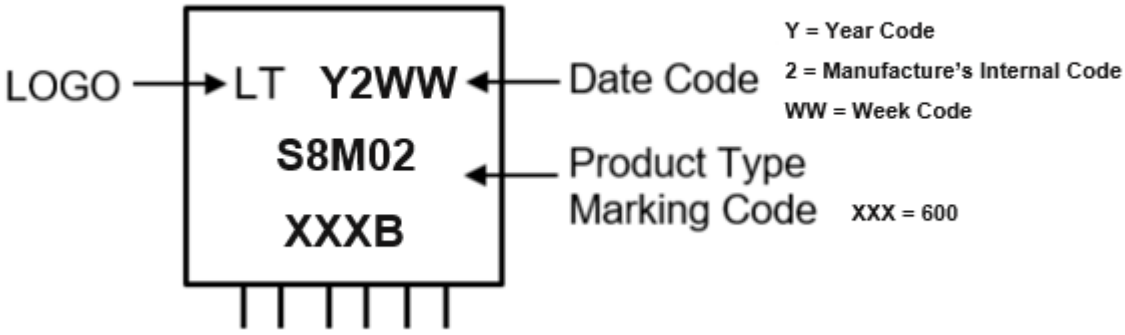


Figure 7. Typical Latching Current versus Junction Temperature

Ordering Information :

Part Number	Package	Packing	
		Qty.	Carrier
S8M02600B	TO-220AB	50	Tube
S8M02600B_HF	TO-220AB	50	Tube

Marking Information :



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