LITE-ON SEMICONDUCTOR

S12M15-B SERIES

Sensitive Gate
Sillicon Controlled Rectifiers
Reverse Blocking Thyristors

SCRs
12 AMPERES RMS
400 thru 600 VOLTS

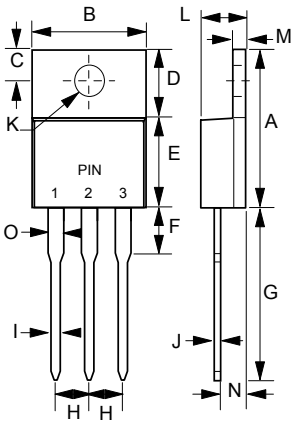
FEATURES

- Blocking Voltage to 600 Volts
- On-State Current Rating of 12 Amperes RMS at 80℃
- Rugged, Economical TO220AB Package
- Glass Passivated Junctions for Reliability and Uniformity
- Minimum and Maximum Values of IGT, VGT an IH Specified for Ease of Design
- High Immunity to dv/dt - 100 V/msec Minimum at 125℃
- Pb-Free Package

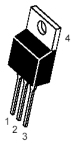
MECHANICAL DATA

- Case: Molded plastic
- Weight: 0.07 ounces, 2.0 grams

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 (Tj= 25℃ unless otherwise noticed)

Rating	Symbol	Value	Unit
Peak Repetitive Off– State Voltage (TJ= -40 to 125℃, Sine Wave, 50 to 60 Hz; Gate Open) S12M15-400B S12M15-600B	VDRM, VRRM	400 600	Volts
On-State RMS Current (180° Conduction Angles,Tc=80℃)	IT(RMS)	12	Amp
Peak Non-Repetitive Surge Current (1/2 Cycle, Sine Wave 60 Hz,Tj = 25℃) (1/2 Cycle, Sine Wave 50 Hz,Tj = 25℃)	ITSM	125 120	Amp
Circuit Fusing Consideration (t = 8.3 ms) (t = 10 ms)	I^2t	64 72	A^2s
Forward Peak Gate Power (Pulse Width ≦ 1.0us,TJ = 80℃)	PGM	5.0	Watt
Forward Average Gate Power (t=8.3ms,Tc = 80℃)	PG(AV)	0.5	Watt
Forward Peak Gate Current (Pulse Width≦ 1.0us,Tc=80℃)	IGM	2.0	Amp
Operating Junction Temperature Range	TJ	-40 to +125	℃
Storage Temperature Range	Tstg	-40 to +150	℃

Notice: (1) VDRM and VRRM 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

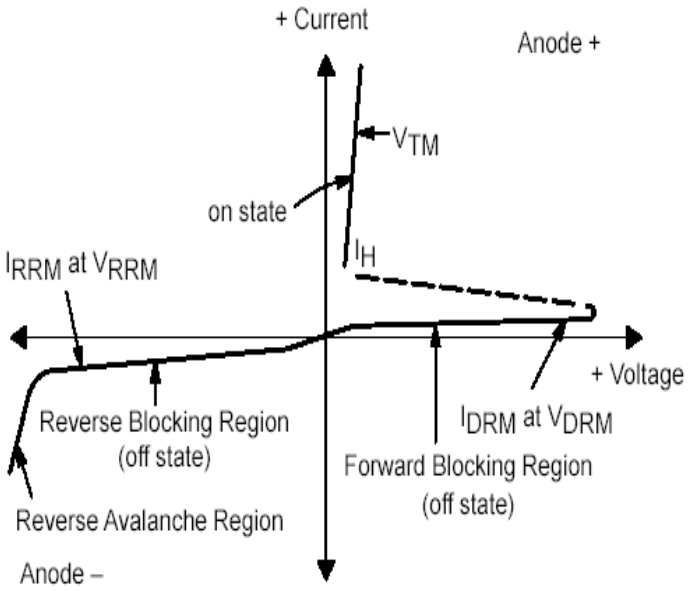
THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Thermal Resistance - Junction to Case - Junction to Ambient	RthJC RthJA	2.2 62.5	℃/W
Maximum Lead Temperature for Soldering Purposes 1/8" from Case for 10 Seconds	TL	260	℃

ELECTRICAL CHARACTERISTICS (TJ=25 ℃ unless otherwise noted)

Characteristics	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Peak Reptitive Forward or Reverse Blocking Current (VD=Rated VDRM and VRRM; Gate Open) TJ=25℃ TJ=125℃	IDRM IRRM	---- ----	---- ----	10 2.0	uA mA
ON CHARACTERISTICS					
Gate Trigger Current (VD = 12 V; RL =100 Ohms)	IGT	2.0	8.0	15	mA
Holding Current (VD = 12 V, Gate Open, Initiating Current = 200 mA)	IH	4.0	20	40	mA
Latch Current (VD=12V,IG = 20mA)	IL	6.0	25	60	mA
Gate Trigger Voltage (VD = 12 V; RL = 100 Ohms)	VGT	0.5	0.65	1.0	Volts
Peak Forward On-State Voltage (ITM= 24 A Peak @Tp ≦2.0 ms, Duty Cycle ≦ 2%)	VTM	----	----	2.2	Volts
DYNAMIC CHARACTERISTICS					
Critical Rate of Rise of Off-State Voltage (VD=Rated VDRM,Exponential Waveform, Gate Open,TJ=125℃)	dv/dt	100	250	----	V/us
Repetitive Critical Rate of Rise of On-state Current IPK=50A,Pw=40 usec,di/dt=1A/usec,Igt=50mA	di/dt	----	----	50	A/us

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



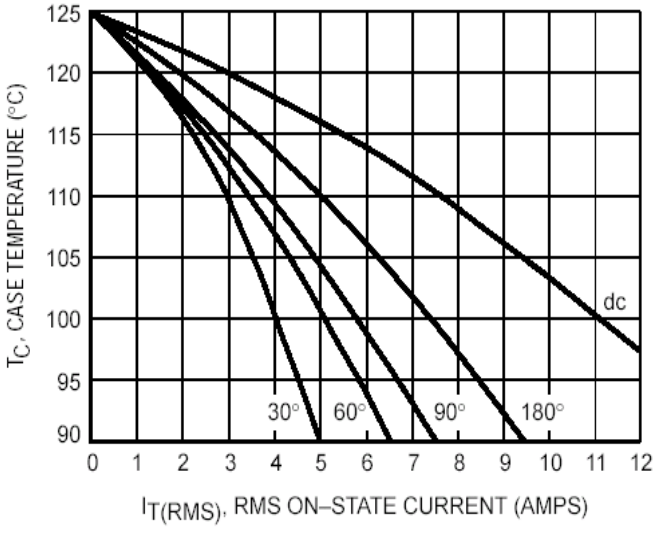


Figure 1. Typical RMS Current Derating

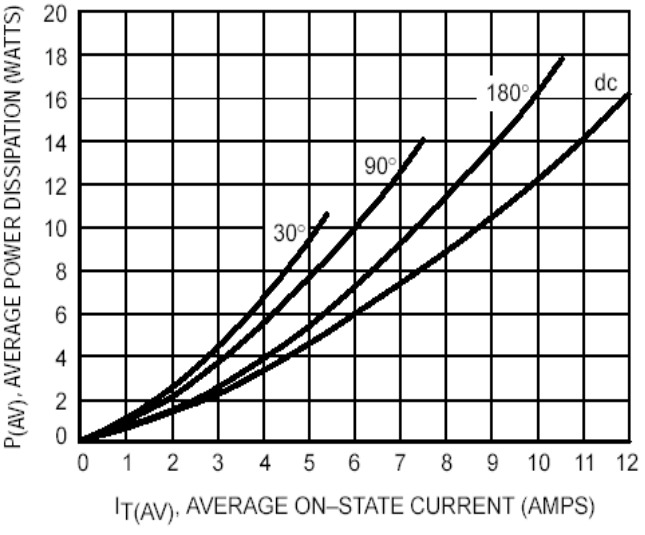


Figure 2. On–State Power Dissipation

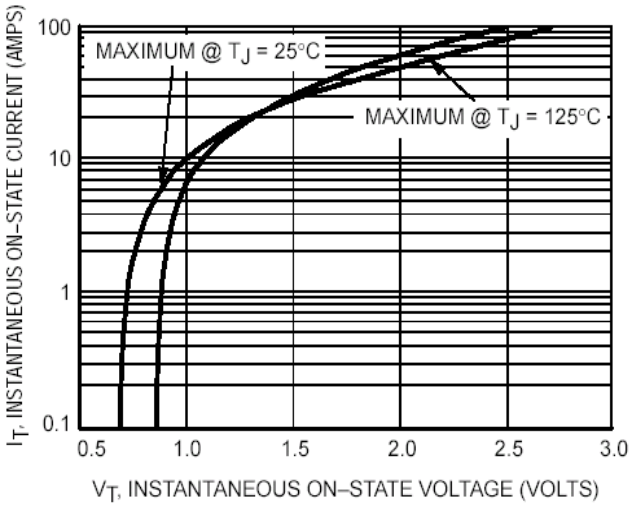


Figure 3. Typical On–State Characteristics

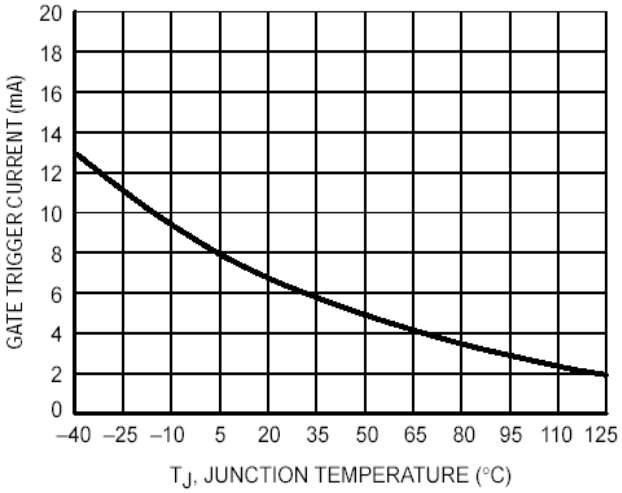


Figure 4. Typical Gate Trigger Current versus Junction Temperature

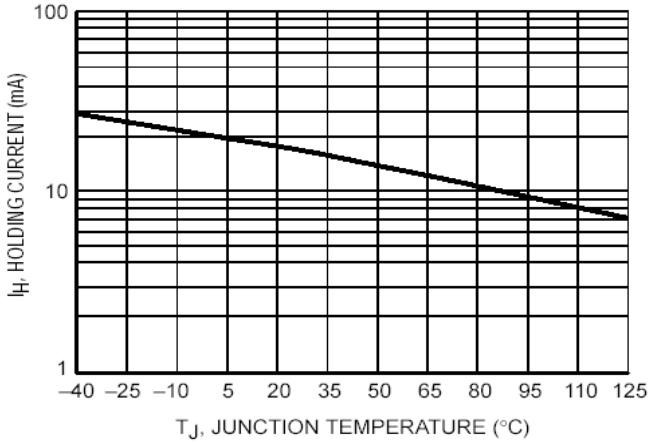


Figure 5. Typical Holding Current versus Junction Temperature

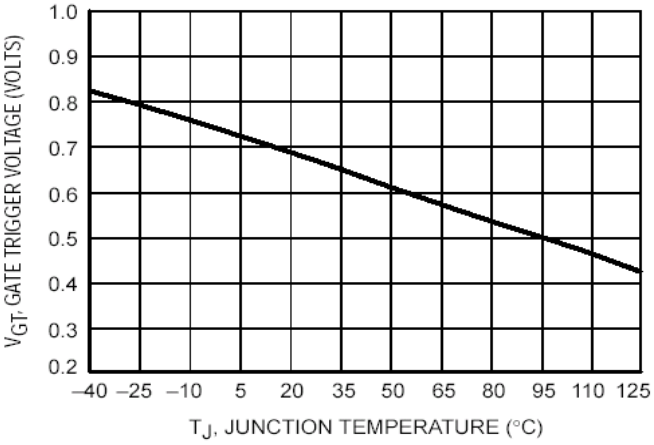


Figure 6. Typical Gate Trigger Voltage versus Junction Temperature

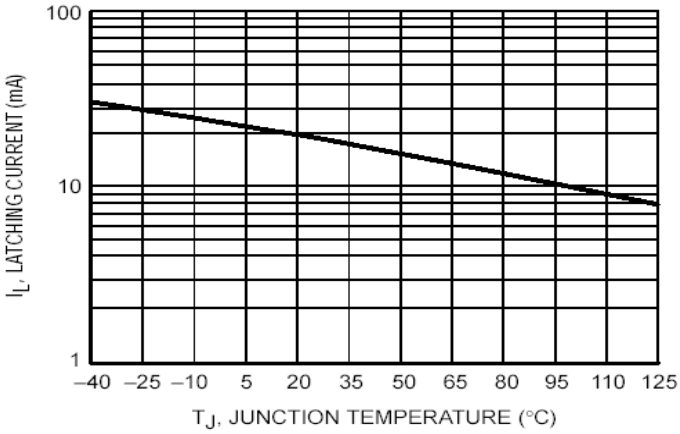


Figure 7. Typical Latching Current versus Junction Temperature