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Silicon Controlled Rectifiers

Reverse Blocking Thyristors

2N6400 Series

Designed primarily for half-wave ac control applications, such as motor controls, heating controls and power supplies; or wherever half–wave silicon gate–controlled, solid–state devices are needed.

- Glass Passivated Junctions with Center Gate Geometry for Greater Parameter Uniformity and Stability
- Small, Rugged, Thermowatt Construction for Low Thermal Resistance, High Heat Dissipation and Durability
- Blocking Voltage to 800 Volts
- Device Marking: Logo, Device Type, e.g., 2N6400, Date Code

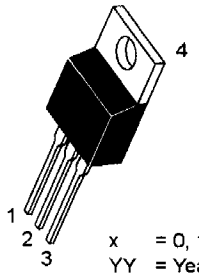
SCRs
16 AMPERES RMS
50 thru 800 VOLTS

***MAXIMUM RATINGS** (T_J = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Peak Repetitive Off–State Voltage (Note 1.) (T_J = – 40 to 125°C, Sine Wave 50 to 60 Hz; Gate Open) 2N6400 2N6401 2N6402 2N6403 2N6404 2N6405	V_{DRM}, V_{RRM}	 50 100 200 400 600 800	Volts
On-State RMS Current (180° Conduction Angles; T_C = 100°C)	$I_{T(RMS)}$	16	A
Average On-State Current (180° Conduction Angles; T_C = 100°C)	$I_{T(AV)}$	10	A
Peak Non-repetitive Surge Current (1/2 Cycle, Sine Wave 60 Hz, T_J = 90°C)	I_{TSM}	160	A
Circuit Fusing (t = 8.3 ms)	I^2t	145	A^2s
Forward Peak Gate Power (Pulse Width ≤ 1.0 μs, T_C = 100°C)	P_{GM}	20	Watts
Forward Average Gate Power (t = 8.3 ms, T_C = 100°C)	$P_{G(AV)}$	0.5	Watts
Forward Peak Gate Current (Pulse Width ≤ 1.0 μs, T_C = 100°C)	I_{GM}	2.0	A
Operating Junction Temperature Range	T_J	–40 to +125	°C
Storage Temperature Range	T_{stg}	–40 to +150	°C

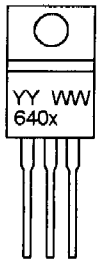
*Indicates JEDEC Registered Data.

1. V_{DRM} and V_{RRM} for all types can be applied on a continuous basis. Ratings apply for zero or negative gate voltage; however, 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.



TO–220AB

MARKING DIAGRAM



x = 0, 1, 2, 3, 4 or 5
YY = Year
WW = Work Week

PIN ASSIGNMENT	
1	Cathode
2	Anode
3	Gate
4	Anode

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.5	°C/W
Maximum Lead Temperature for Soldering Purposes 1/8″ from Case for 10 Seconds	T_L	260	°C

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted.)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
*Peak Repetitive Forward or Reverse Blocking Current (V_{AK} = Rated V_{DRM} or V_{RRM}, Gate Open)	T_J = 25°C T_J = 125°C	I_{DRM}, I_{RRM}	– –	– –	10 2.0	μA mA
ON CHARACTERISTICS						
*Peak Forward On–State Voltage (I_{TM} = 32 A Peak, Pulse Width ≤ 1 ms, Duty Cycle ≤ 2%)		V_{TM}	–	–	1.7	Volts
*Gate Trigger Current (Continuous dc) (V_D = 12 Vdc, R_L = 100 Ohms)	T_C = 25°C T_C = –40°C	I_{GT}	– –	9.0 –	30 60	mA
*Gate Trigger Voltage (Continuous dc) (V_D = 12 Vdc, R_L = 100 Ohms)	T_C = 25°C T_C = –40°C	V_{GT}	– –	0.7 –	1.5 2.5	Volts
Gate Non–Trigger Voltage (V_D = 12 Vdc, R_L = 100 Ohms)	T_C = +125°C	V_{GD}	0.2	–	–	Volts
*Holding Current (V_D = 12 Vdc, Initiating Current = 200 mA, Gate Open)	T_C = 25°C *T_C = –40°C	I_H	– –	18 –	40 60	mA
Turn-On Time (I_{TM} = 16 A, I_{GT} = 40 mAdc, V_D = Rated V_{DRM})		t_{gt}	–	1.0	–	μs
Turn-Off Time (I_{TM} = 16 A, I_R = 16 A, V_D = Rated V_{DRM})	T_C = 25°C T_J = +125°C	t_q	– –	15 35	– –	μs
DYNAMIC CHARACTERISTICS						
Critical Rate–of–Rise of Off-State Voltage (V_D = Rated V_{DRM}, Exponential Waveform)	T_J = +125°C	dv/dt	–	50	–	V/μs

*Indicates JEDEC Registered Data.