PRELIMINARY

UPGA301A

Nanosecond SCR SWITCH

PRODUCT PREVIEW

DESCRIPTION

Designed for high current narrow-pulse switching applications where size and current handling capability are critical. These devices may be triggered on using low power logic drivers from (+0.8 V at 200 µA).

Epoxy packaged, oxide passivated planar SCR chips with metallurgic bonds on both sides to achieve high reliability. Internal wire bond connection allows high current surge capability for narrow pulse applications.

IMPORTANT: For the most current data, consult *MICROSEMI*'s website: **http://www.microsemi.com**

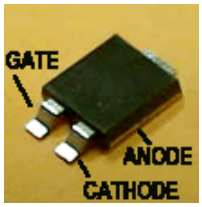
ABSOLUTE MAXIMUM RATINGS AT 25° C (UNLESS OTHERWISE SPECIFIED)

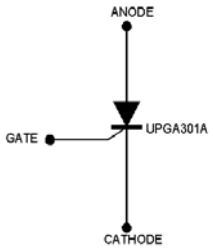
Rating	Symbol	Value	Unit
Repetative peak Off-State Voltage	V_{DRM}	125	V
Peak On-State Current	I_{TSM}	100	A
Peak Gate Current	I_{GM}	250	mA
Reverse Gate Voltage	V_{GR}	5	V
Storage Temperature Range	T s	-50 to 150	ºC
Operating Temperature Range	T_J	-25 to 125	ºC

THERMAL CHARACTERISTICS (UNLESS OTHERWISE SPECIFIED)

Thermal Resistance			
Junction-to Case (Anode)	RJ	4.0	ºC/Watt

(1) Mounted on 2" square by 0.06' thick FR4 board with a 1" x 1" square 2 ounce copper pattern.
(2) Mounted on 0.06 thick FR4 board, using recommended footprint.





Small foot print

.100 X .160 inches
Foot print Area 16.51 mm^2
1:1 Actual size (anode contact)

KEY FEATURES

- Powermite 3 ® Package
- Small Mechanical Outline
- High speed switching capability
- Logic drive capability (0.8V, 200µA)
- UIS Rated Available with Lot Acceptance Testing
- Ideal for Laser Range finder and Camera Applications
- Ideal for Automotive Collision Avoidance Applications
- Available in 16mm Tape and Reel—6000 units/reel

APPLICATIONS/BENEFITS

- Microsemi Corp DN14 design note

Nanosecond SCR switch for reliable high current pulse generators, modulators and photo-flash quenching.

Several new applications for nanosecond SCR switches include automotive collision avoidance systems, laser drivers, photo-flash quenching circuits, specially developed circuits for the emerging digital imaging range finders and communication markets.

Microsemi
580 Pleasant Street, Watertown, MA. 02472-2408, 617-926-0404, Fax: 617-924-1235

Microsemi
WATERTOWN DIVISION

UPGA301A

Nanosecond SCR SWITCH

PRODUCT PREVIEW

ELECTRICAL PARAMETERS@25°C (unless otherwise specified)						
Parameter	**Symbol**	**Conditions**	**Min.**	**Typ.**	**Max.**	**Units**
On characteristics (up to 100 A w/ 100 ns pulse @ Duty Cycle = 0.0001% or less)						
Forward Blocking Current	I_{DRM}	V_{DRM} = 100V, R_{GK} = 1k Ω			1.0	µA
On - State Voltage	V_T	I_T = 1A, Ig =10mA		1.1	1.5	V
Gate Trigger Voltage	V_{GT}	V_D = 5V, R_{GS} = 100Ω		0.5	0.75	V
Gate Trigger Current	I_{GT}	V_D = 5V, R_{GS} = 10kΩ		2	20	µA
Reverse Gate Current	I_{GR}	V_{GR} = 5V		0.01	0.1	mA
Holding Current	I_H	V_D = 5V, R_{GK} = 1kΩ	0.3	1.0	2.5	mA
Reverse Current (note 1)	I_{RRM}	V_{RRM} = 30V, R_{GK} = 1kΩ		1	10	mA
Switching characteristics (Tc = 25 °C)						
Delay Time	td	Ig = 20 mA, I_T = 1A		20	30	ns
Rise Time	tr	V_D = 100V, I_T = 1A, Ig =10mA DC < 1%		15	25	ns
Circuit Commutated Turn—off Time	tq	I_T = I_R = 1A, R_{GK} = 1kΩ		0.3	0.5	µs
Gate Trigger—on Pulse Width	tpg(on)	Ig = 10mA, I_T = 1A		20	50	ns
Critical Rate of Rise Off –State Voltage	dv/dt	V_D = 30V, R_{GK} = 1kΩ	15	30		V/µs

Note 1: Pulse Test intended to guarantee reverse anode voltage capability for pulse commutation.

SPICE MODEL

.subckt SCR anode gate cathode PARAMS:
* Powermite 3 UPGA301A high-speed thyristor
+Vdrm=125V Vrrm=30V Idrm=1µA Ih=5mA
+dvdt=7E5V/s Igt=200µA Vgt=0.75V Vtm=1.5V
+Itm=2A ton=55ns toff=500ns
.END

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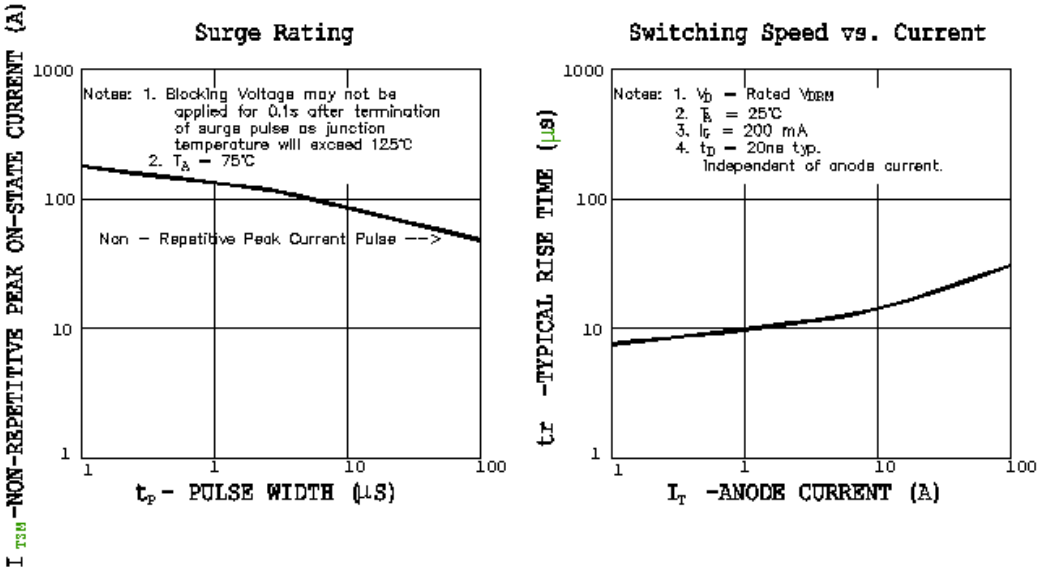
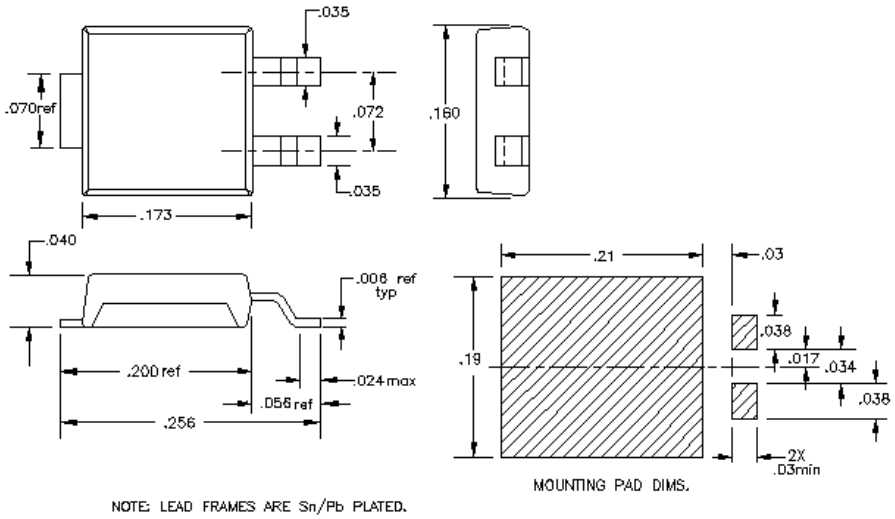


Case: Molded Epoxy
Meets UL94VO at 1/8 inch
Weght: 72 milligrams
Lead and Mounting Temperature: 260°C max for 10 seconds

NOTE: All dimensions are in inches.



PACKAGE DATA

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NOTES:

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