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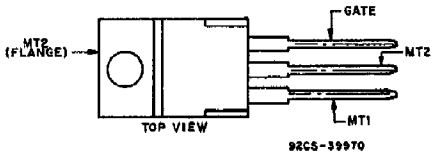
12-A Silicon Triacs

For Power Control and Power-Switching Applications

Features:

- *800V, 125 Deg. C T_J Operating*
- *High dv/dt and di/dt Capability*
- *Low Switching Losses*
- *High Pulse Current Capability*
- *Low Forward and Reverse Leakage*
- *Sipos Oxide Glass Multilayer Passivation System*
- *Advanced Unisurface Construction*
- *Precise Ion Implanted Diffusion Source*

TERMINAL DESIGNATIONS



TO-220AB

The 2N6342A–2N6349A series triacs are gate-controlled full-wave silicon switches utilizing a plastic case with three leads to facilitate mounting on printed-circuit boards. They are intended for the control of ac loads in such applications as motor controls, light dimmers, heating controls, and power-switching systems.

These devices are designed to switch from an off-state to an on-state for either polarity of applied voltage with positive or negative gate triggering voltages. They have an on-state current rating of 12 amperes at a T_C of 80°C and repetitive off-state voltage ratings of 200, 400, 600, and 800 volts. The plastic package design provides not only ease of mounting but also low thermal impedance, which allows operation at high case temperatures and permits reduced heat-sink size.

MAXIMUM RATINGS, *Absolute-Maximum Values:*

	2N6342A 2N6346A	2N6343A 2N6347A	2N6344A 2N6348A	2N6345A 2N6349A	
V_{DROM} T_J = -40 to 110°C	200	400	600	800	V
$I_{T(RMS)}$ T_C = 80°C, θ 360°	12				A
For other conditions	See Figs. 5				
I_{TSM}					
For one cycle of applied principal voltage					
* 60 Hz (sinusoidal), T_C = 80°C	120				A
50 Hz (sinusoidal), T_C = 80°C	113				A
For more than one cycle of applied principal voltage	See Fig. 6				
di/dt					
$v_D = V_{DROM}$, I_{GT} = 200 mA, $t_r \leq 0.1\ \mu s$	100				A/μs
I^2t (At T_C shown for $I_{T(RMS)}$, half-sine wave):					
t = 10 ms	64				A^2s
= 2.5 ms	40				A^2s
= 0.5 ms	23				A^2s
* = 1 to 8.3 ms	40				A^2s
*I_{GTM}■					
For 1 μs max.	4				A
*P_{GM} (For 1 μs max., $I_{GTM} \leq 4$ A	20				W
*$P_{G(AV)}$	0.5				W
*T_{stg}	-40 to 150				°C
*T_C	-40 to 110				°C
*T_T During soldering for 10 s max.	230				°C

*In accordance with JEDEC registration data format JC-22 RDF-2.
●For either polarity to main terminal 2 voltage (V_{MT2}) with reference to main terminal 1.
■For either polarity to gate voltge (V_G) with reference to main terminal 1.

2N6342A-2N6349A Series

ELECTRICAL CHARACTERISTICS
At Maximum Ratings Unless Otherwise Specified, and at Indicated Temperatures

CHARACTERISTIC					LIMITS For All Types Except as Specified			UNITS
					Min.	Typ.	Max.	
I_{DROM}● T_J = 110°C, V_{DROM} = Max, rated value					—	—	2	mA
V_{TM}● I_T = 17A (peak), T_C = 25°C					—	1.3	1.75	V
I_{HO}● Gate open, Initial principal current = 200 mA								
v_D = 12V, T_C = 25°C					—	6	40	mA
= -40°C					—	—	75	
dv/dt● (Commutating)								
$v_D = V_{DROM}$, I_{TM} = 17A, di/dt = 6.5A/ms. T_C = 80°C					—	5	—	
dv/dt● (Off-State)								V/μs
$v_D = V_{DROM}$, T_C = 100°C								
2N6342A, 2N6346A					100	300	—	
2N6343A, 2N6347A					75	250	—	
2N6344A, 2N6348A					60	200	—	
2N6345A, 2N6349A					30	70	—	
I_{GT}●■ v_D = 12V (dc), R_L = 100 Ω								
	Mode	V_{MT2}	V_G		—			
	1+	+	+		—	6	50	
T_C = 25°C	111-	-	-		—	10	50	
	1-	+	-	(2N6346A-49A only)	—	6	75	
	111+	-	+	(2N6346A-49A only)	—	25	75	mA
	1+	+	+		—	—	100	
T_C = -40°C	111-	-	-		—	—	100	
	1-	+	-	(2N6346A-49A only)	—	—	125	
	111+	-	+	(2N6346A-49A only)	—	—	125	
V_{GT}●■ v_D = 12V (dc), R_L = 100 Ω								
	Mode	V_{MT2}	V_G					
	1+	+	+		—	0.9	2	
T_C = 25°C	111-	-	-		—	1.1	2	
	1-	+	-	(2N6346A-48A only)	—	0.9	2.5	
	111+	-	+	(2N6346A-48A only)	—	1.4	2.5	
	1+	+	+		—	—	2.5	
T_C = -40°C	111-	-	-		—	—	2.5	
	1-	+	-	(2N6346A-49A only)	—	—	3	V
	111+	-	+	(2N6346A-49A only)	—	—	3	
$v_D = V_{DROM}$, R_L = 10 KΩ								
	1+	+	+		0.2	—	—	
T_J = 110°C	111-	-	-		0.2	—	—	
	1-	+	-	(2N6346A-49A only)	0.2	—	—	
	111+	1-	+	(2N6346A-49A only)	0.2	—	—	
t_{gt} $V_D = V_{DROM}$, I_{GT} = 120mA, t_r = 0.1 μs, i_T = 17A (peak), T_C = 25°C					—	1.5	2	μs
$R_{\theta JC}$					—	—	2	°C/W

*In accordance with JEDEC registration data format JC-22 RDF2.
●For either polarity of main terminal 2 voltage (V_{MT2}) with reference to main terminal 1.
■For either polarity of gate voltage (V_G) with reference to main terminal 1.