



Part number scheme
TO-93 A 210 N 12 STD
 1 2 3 4 5 6

- 1) Package designation
- 2) Anode to tread
- 3) Series number
- 4) Designates standard recovery time
- 5) Voltage Multiplier (example: 12 x 100 = 1200)
- 6) Specifies 3/4 -16 UNF-2A Tread

Features:

- ✓ All diffused silicone.
- ✓ Amplifying gate.
- ✓ Standard recovery time for phase control applications.
- ✓ Vibration resistant.
- ✓ Metal and ceramic package construction.

Voltage

Parameter	Symbol	Rating	Units
Maximum Repetitive Off-State Voltage <small>Notes: 1, 3, 4, 5, 6, 7</small>	V_{DRM}	1200 ~ 1600	Volts
Maximum Repetitive Reverse Voltage <small>Notes: 1, 3, 4, 5, 6</small>	V_{RRM}	1200 ~ 1600	Volts
Maximum non repetitive Surge of Reverse Voltage <small>Notes: 2, 3, 4, 5, 6</small>	V_{RSM}	$V_{RRM} + 100$	Volts
Maximum non repetitive on-state Voltage drop <small>Notes: 2, 3</small>	$V_{TM} @ I_{TM}$	1.6 @ 630	V @ A
Critical rate of rising off-state Voltage, Linear to 80% of V_{DRM} <small>Note: 2</small>	dv/dt	500	V/ μ s
<small>Note 1: T_J 25°C. Note 2: T_J 125°C. Note 3: Measured at the peak of the sine wave, Note 4: Below 0°C derate V_{DRM} and V_{RRM} 10%. Note 5: V_{DRM} and V_{RRM} have I_{DRM}, I_{RRM} of up to 35mA. Note 6: V_{DR} and V_{RR} have typical I_{DR}, I_{RR} of 2-7mA. Note 7: For DC applications derate V_{DRM} 45%.</small>			
<small>Specifying voltage: 1400V, TO-93A210N14 1200V, TO-93A210N12 1600V, TO-93A210N16 Above 1600V inquire for availability.</small>			

Gate

Parameter	Symbol	Rating			Units
		Temp.	Typ.	Max.	
Gate Trigger Voltage <small>Note 3</small>	V_{GT}	-20°C	1.9 ~ 2.2	3	Volts
		25°C	1.4 ~ 1.6		
		125°C	1.9 ~ 2.3		
Maximum Gate Trigger Current <small>Notes 1,3</small>	I_{GT}	150			mA
Minimum Forward Current to Latch on-state <small>Notes 1, 5</small>	I_L	300			mA
Minimum Forward Current to Hold on-state <small>Notes 1, 5</small>	I_H	300			mA
Average Gate Power (recommended) <small>Note 2, 3</small>	$P_{G(AVE)}$	0.9 ~ 2			Watts
<small>Note 1: T_J 25°C. Note 2: T_J 125°C. Note 3: Rectangular pulse, $t_p \leq 8.3$ ms. Note 4: Rectangular -V_{DC} pulse, $t_p \leq 8.3$ ms. Note 5: Test conditions: I_{DC}, $R_L = 12\Omega$.</small>					

Current

Parameter	Symbol	Rating	Units
Maximum, Average, On state, Current <small>Notes: 3, 4</small>	$I_{T(AVE)}$	216	Amperes
Maximum, RMS, On state, Current <small>Notes: 3, 5</small>	$I_{T(RMS)}$	340	Amperes
Maximum non repetitive, Surge, On state, Current ,with no reverse voltage reapplied. <small>Notes: 2, 4</small>	$I_{TSM} 0\% V_{RRM}$	4.5	kA
Critical rate of rising On-state Current, non repetitive <small>Note: 6, 7</small>	di/dt	150	A/ μ s
I_{DRM} = Maximum (threshold), Repetitive, Off-State, Current. <small>Note: 1</small> I_{RRM} = Maximum (threshold), Repetitive, Reverse, Current. <small>Note: 1</small>	I_{DRM} & I_{RRM}	10	mA
Fuse's absolute maximum $I^2 t$ with no reverse voltage reapplied <small>Note: 2, 4</small>	$I^2 t, 0\% V_{RR}$	128.0	kA
<small>Note 1: T_J 25°C. Note 2: T_J 125°C. Note 3: T_{Case} 85°C, air cooled. Note 4: 180° conduction, 60Hz sine wave. Note 5: Test conditions: I_{DC}, $R_L = 12\Omega$. Note 6: Switching from $V_{DRM} \leq 1000V$ Note 7: In addition to 0.2μF and 20Ω snubber circuit</small>			

Thermal & Mechanical

Parameter	Symbol	Rating	Units
Operating Temperature Range	T_J	-40° ~ 125°	°Celsius
Maximum Thermal resistance, Junction to Case	R_{th-J-C}	0.13	°C/W
Maximum Thermal resistance, Case to Heat Sink	$R_{th-C-HS}$	0.06	°C/W
Mounting Torque <small>Non Lubricated Treads (Lubricated Treads)</small>		31 (24.5)	Nm
		275 (210)	lbf-in