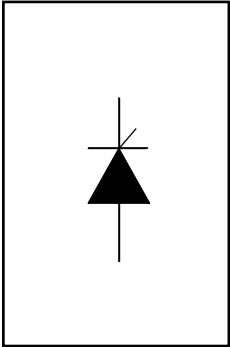


PHASE CONTROL SCR

Description/Features

The 16TTS.. new series of silicon controlled rectifiers are specifically designed for medium power switching and phase control applications. The glass passivation technology used has reliable operation up to 125° C junction temperature.

Typical applications are in input rectification (soft start) and these products are designed to be used with International Rectifier input diodes, switches and output rectifiers which are available in identical package outlines.



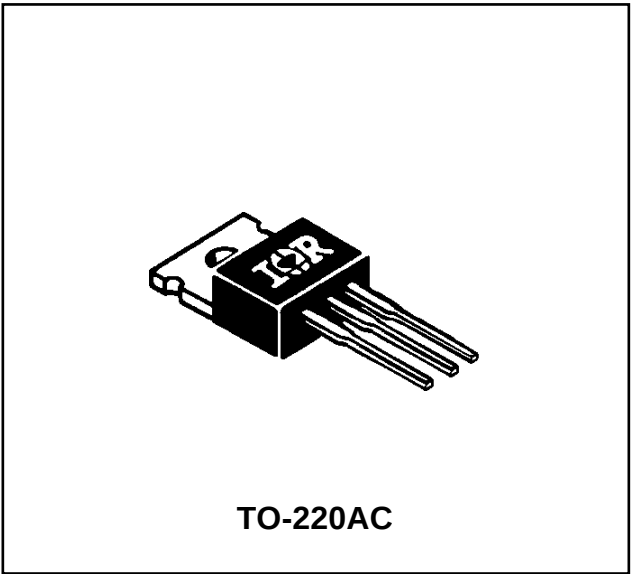
V_T	$<1.4V @ 10A$
I_{TSM}	$= 200A$
V_R/V_D	$= 1200V$

Output Current in Typical Applications

Applications	Single-phase Bridge	Three-phase Bridge	Units
Capacitive input filter $T_A = 55^\circ C, T_J = 125^\circ C$, common heatsink of $1^\circ C/W$	13.5	17	A

Major Ratings and Characteristics

Characteristics	16TTS..S	Units
$I_{T(AV)}$ Sinusoidal waveform	10	A
I_{RMS}	16	A
V_{RRM}/V_{DRM}	800 and 1200	V
I_{TSM}	200	A
$V_T @ 10 A, T_J = 25^\circ C$	1.4	V
dv/dt	500	V/ μs
di/dt	150	A/ μs
T_J	-40 to 125	$^\circ C$



Also available in SMD-220 package (series 16TTS..S)

Voltage Ratings

Part Number	V_{RRM} , maximum peak reverse voltage V	V_{DRM} , maximum peak direct voltage V	I_{RRM}/I_{DRM} 125°C mA
16TTS08	800	800	5
16TTS12	1200	1200	

Absolute Maximum Ratings

Parameters		16TTS..	Units	Conditions	
I _{T(AV)}	Max. Average On-state Current	10	A	50% duty cycle @ T _C = 98° C, sinusoidal wave form	
I _{RMS}	Max. RMS On-state Current	16			
I _{TSM}	Max. Peak One Cycle Non-Repetitive	170		10ms Sine pulse, rated V _{RRM} applied	
	Surge Current	200		10ms Sine pulse, no voltage reapplied	
I ² t	Max. I ² t for fusing	144	A ² s	10ms Sine pulse, rated V _{RRM} applied	
		200		10ms Sine pulse, no voltage reapplied	
I ² √t	Max. I ² √t for fusing	2000	A ² √s	t = 0.1 to 10ms, no voltage reapplied	
V _{TM}	Max. On-state Voltage Drop	1.4	V	@ 10A, T _J = 25°C	
r _t	On-state slope resistance	24.0	mΩ	T _J = 125°C	
V _{T(TO)}	Threshold Voltage	1.1	V		
I _{RM} /I _{DM}	Max.Reverse and Direct	0.5	mA	T _J = 25 °C	V _R = rated V _{RRM} / V _{DRM}
	Leakage Current	5.0		T _J = 125 °C	
I _H	Max. Holding Current	100	mA	Anode Supply = 6V, Resistive load, Initial I _T =1A	
I _L	Max. Latching Current	200	mA	Anode Supply = 6V, Resistive load	
dv/dt	Max. rate of rise of off-state Voltage	500	V/μs		
di/dt	Max. rate of rise of turned-on Current	150	A/μs		

Triggering

Parameters	16TTS..	Units	Conditions
P_{GM} Max. peak Gate Power	8.0	W	
$P_{G(AV)}$ Max. average Gate Power	2.0		
$+ I_{GM}$ Max. peak positive Gate Current	1.5	A	
$- V_{GM}$ Max. peak negative Gate Voltage	10	V	
I_{GT} Max. required DC Gate Current to trigger	90	mA	Anode supply = 6V, resistive load, $T_J = -65^{\circ}\text{C}$
	60		Anode supply = 6V, resistive load, $T_J = 25^{\circ}\text{C}$
	35		Anode supply = 6V, resistive load, $T_J = 125^{\circ}\text{C}$
V_{GT} Max. required DC Gate Voltage to trigger	3.0	V	Anode supply = 6V, resistive load, $T_J = -65^{\circ}\text{C}$
	2.0		Anode supply = 6V, resistive load, $T_J = 25^{\circ}\text{C}$
	1.0		Anode supply = 6V, resistive load, $T_J = 125^{\circ}\text{C}$
V_{GD} Max. DC Gate Voltage not to trigger	0.2		$T_J = 125^{\circ}\text{C}$, $V_{DRM} = \text{rated value}$
I_{GD} Max. DC Gate Current not to trigger	2.0	mA	$T_J = 125^{\circ}\text{C}$, $V_{DRM} = \text{rated value}$

Switching

Parameters	16TTS..	Units	Conditions
t_{gt} Typical turn-on time	0.9	μs	$T_J = 25^{\circ}\text{C}$
t_{rr} Typical reverse recovery time	4		$T_J = 125^{\circ}\text{C}$
t_q Typical turn-off time	110		

Thermal-Mechanical Specifications

Parameters			16TTS..	Units	Conditions
T _j	Max. Junction Temperature Range		- 40 to 125	°C	
T _{stg}	Max. Storage Temperature Range		- 40 to 125		
R _{thJC}	Max. Thermal Resistance Junction to Case		1.3	°C/W	DC operation
R _{thJA}	Max. Thermal Resistance Junction to Ambient		62		
R _{thCS}	Typ. Thermal Resistance Case to Ambient		0.5		Mounting surface, smooth and greased
wt	Approximate Weight		2 (0.07)	g (oz.)	
T	Mounting Torque	Min.	6 (5)	Kg-cm (lbf-in)	
		Max.	12 (10)		
Case Style			TO-220AC		

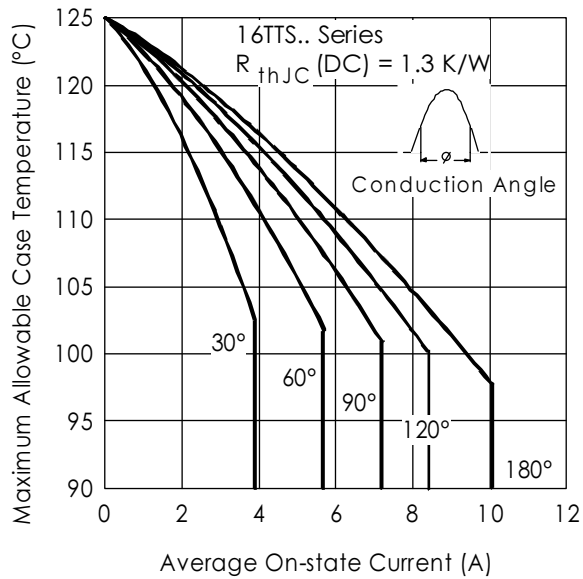


Fig. 1 - Current Rating Characteristics

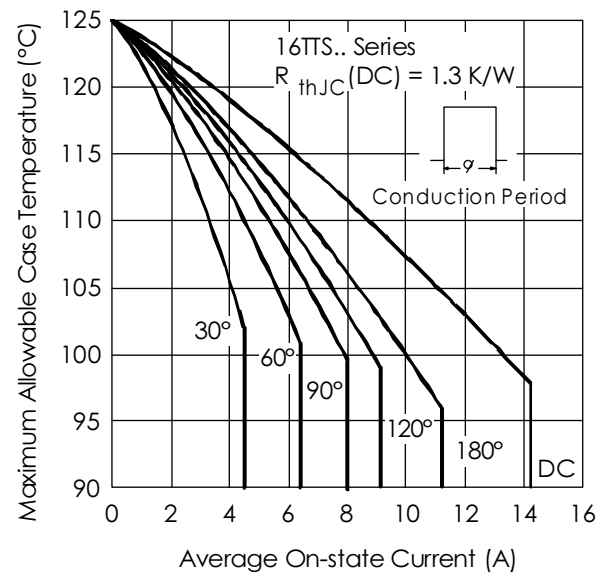


Fig. 2 - Current Rating Characteristics

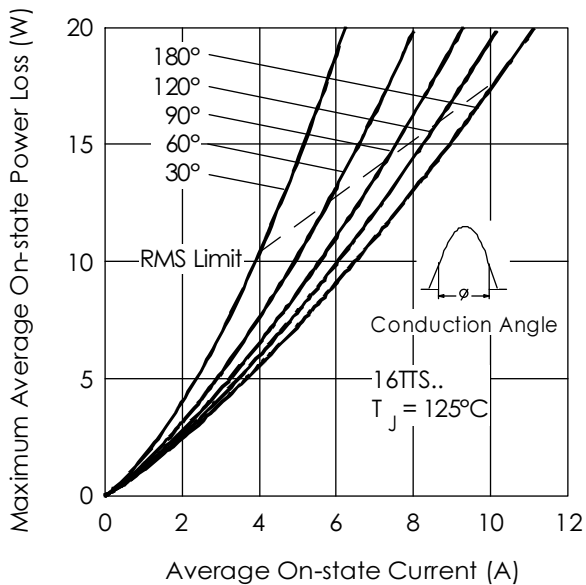


Fig. 3 - On-state Power Loss Characteristics

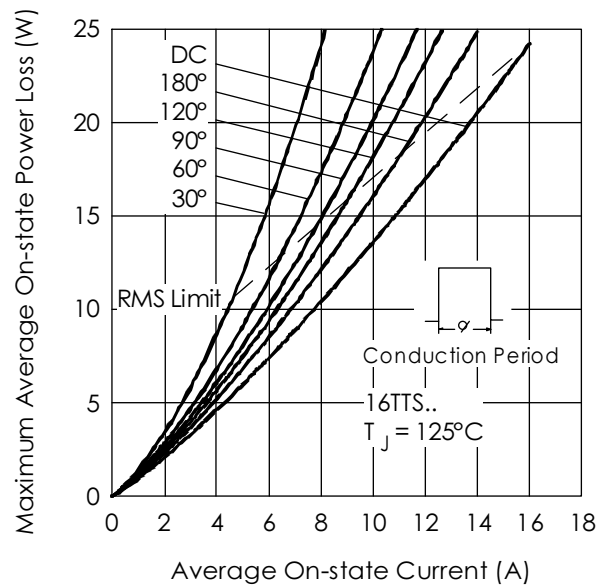


Fig. 4 - On-state Power Loss Characteristics

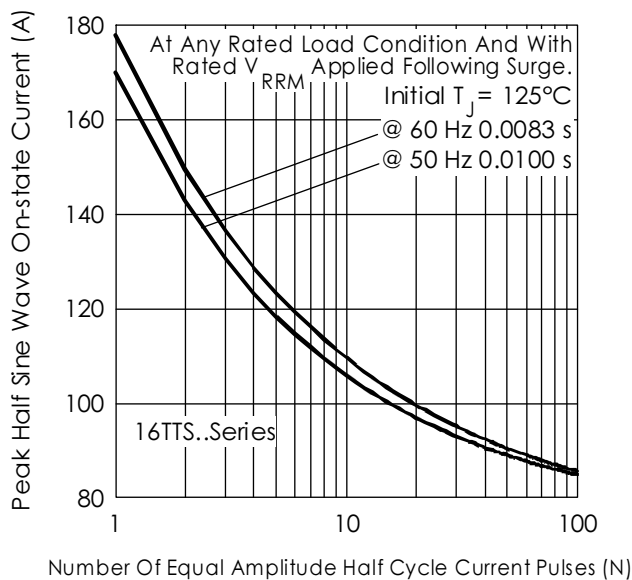


Fig. 6 - Maximum Non-Repetitive Surge Current

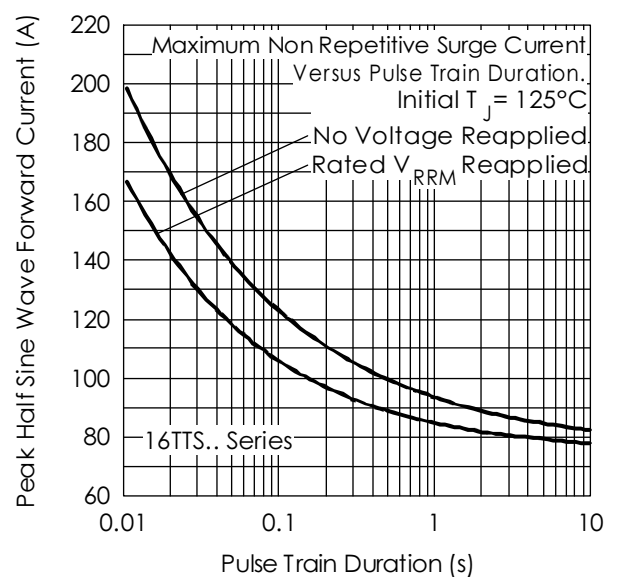


Fig. 7 - Maximum Non-Repetitive Surge Current

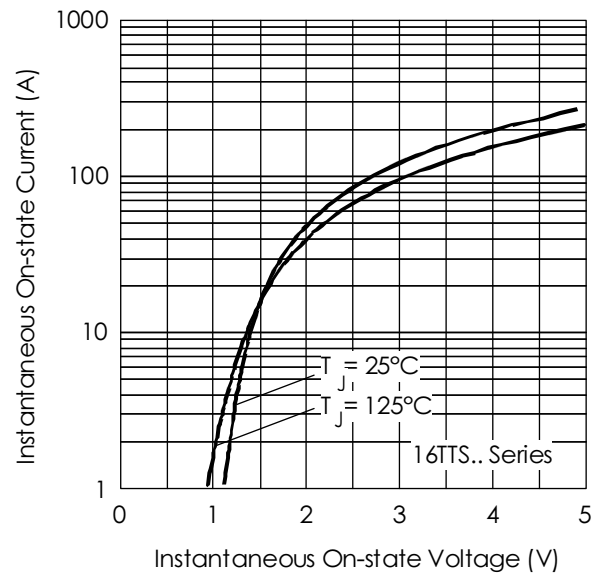


Fig. 7 - On-state Voltage Drop Characteristics

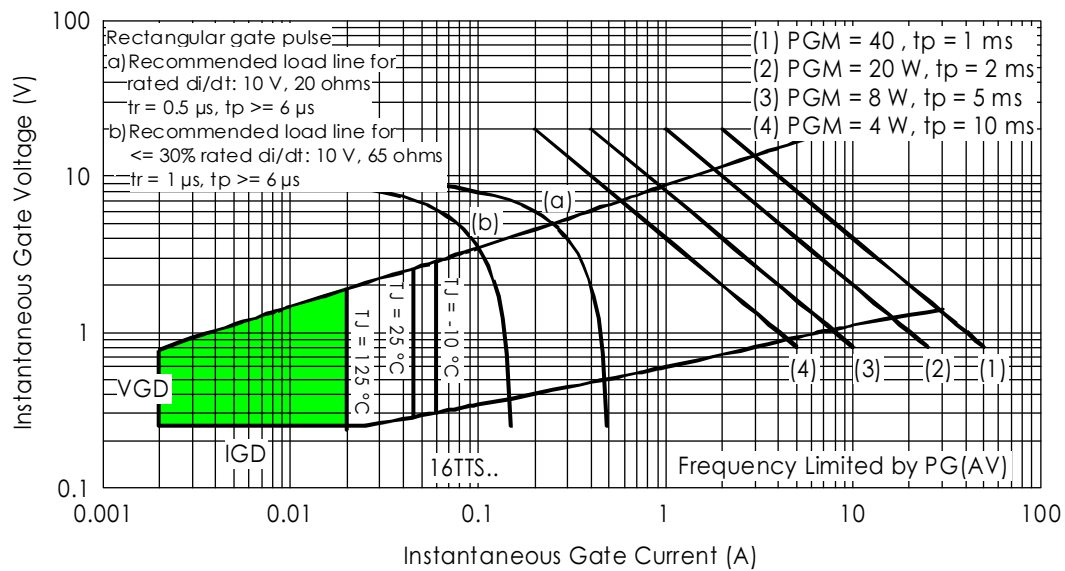
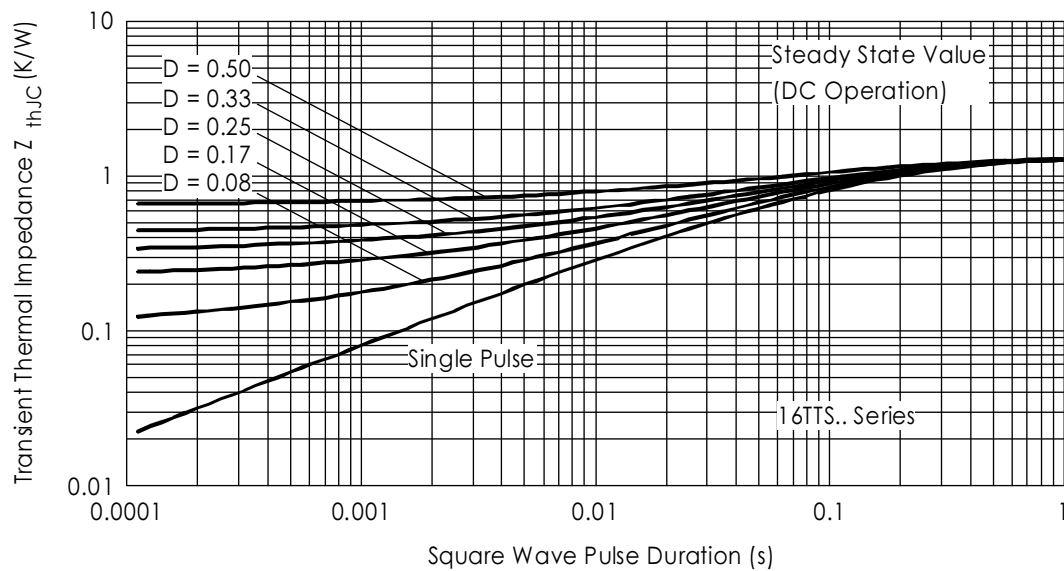
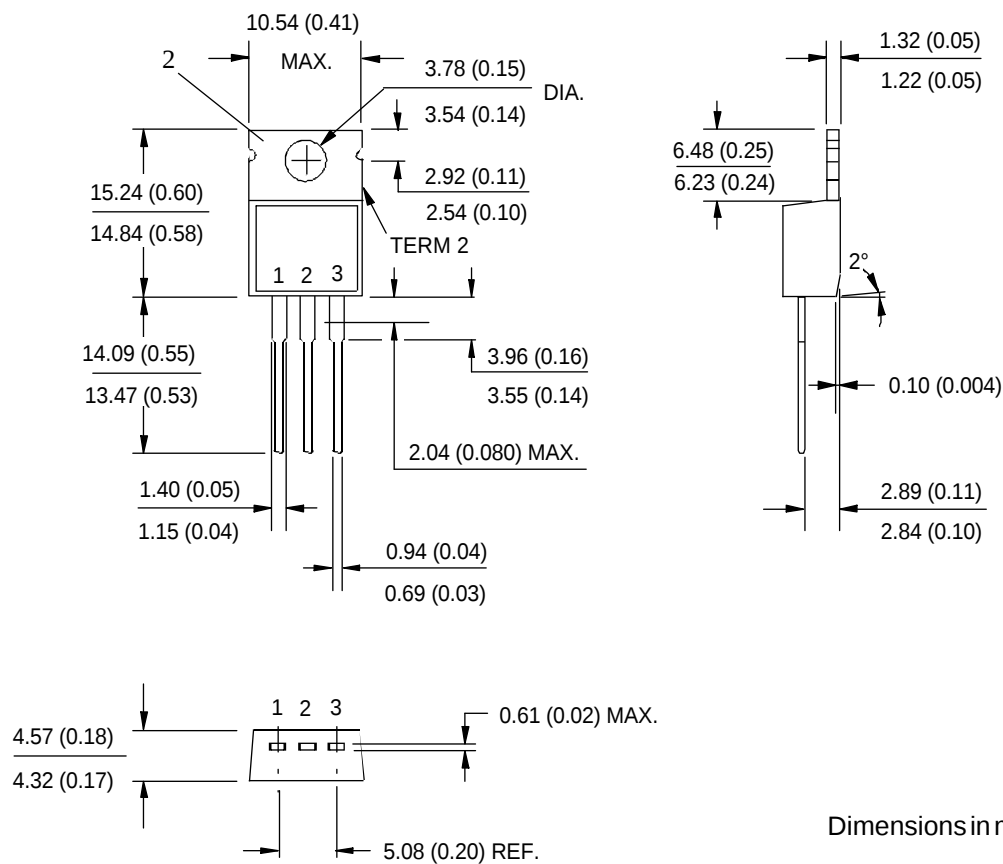


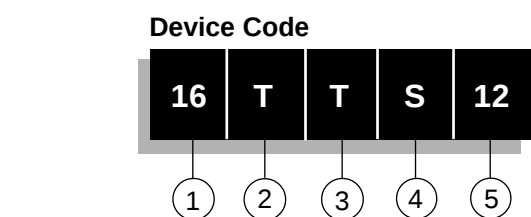
Fig. 8 - Gate Characteristics


Fig. 9 - Thermal Impedance Z_{thJC} Characteristics

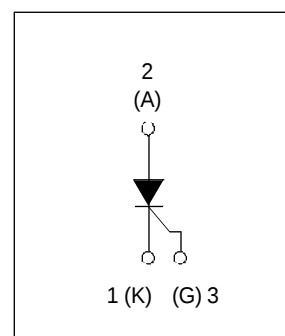
Outline Table



Ordering Information Table



- 1** - Current Rating, RMS value
- 2** - Circuit Configuration
T = Single Thyristor
- 3** - Package
T = TO-220AC
- 4** - Type of Silicon
S = Converter Grade
- 5** - Voltage code: Code x 100 = V_{RRM}



08 = 800V
12 = 1200V