


### PHASE CONTROL SCR

**Description/Features**

The 25TTS.. 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.

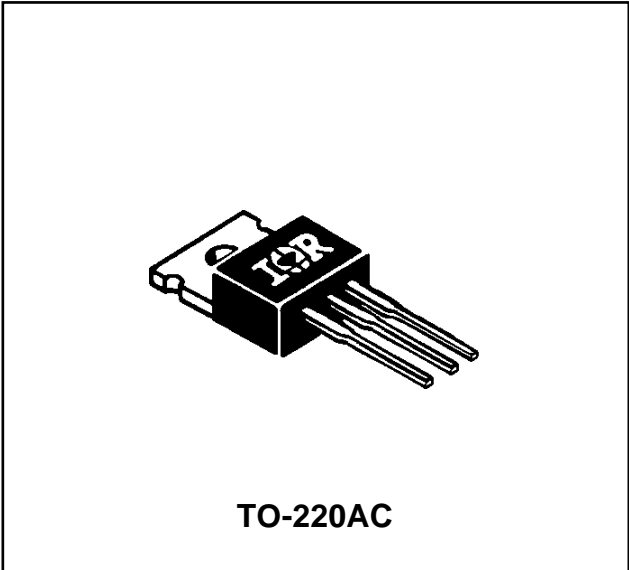
	$V_T < 1.25V @ 16A$ $I_{TSM} = 200A$ $V_R / V_D = 1200V$
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**Output Current in Typical Applications**

Applications	Single-phase Bridge	Three-phase Bridge	Units
Capacitive input filter $T_A = 55^\circ C, T_J = 125^\circ C,$ common heatsink of $1^\circ C/W$	18	22	A

**Major Ratings and Characteristics**

Characteristics	25TTS..	Units
$I_{T(AV)}$ Sinusoidal waveform	16	A
$I_{RMS}$	25	A
$V_{RRM} / V_{DRM}$	800 and 1200	V
$I_{TSM}$	250	A
$V_T @ 16 A, T_J = 25^\circ C$	1.25	V
dv/dt	500	V/ $\mu s$
di/dt	150	A/ $\mu s$
$T_J$	-40 to 125	°C



Also available in SMD-220 package (series 25TTS..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
25TTS08	800	800	5
25TTS12	1200	1200	

## Absolute Maximum Ratings

Parameters	25TTS..	Units	Conditions	
$I_{T(AV)}$ Max. Average On-state Current	16	A	50% duty cycle @ $T_C = 90^\circ\text{C}$ , sinusoidal wave form	
$I_{RMS}$ Max. RMS On-state Current	25			
$I_{TSM}$ Max. Peak One Cycle Non-Repetitive Surge Current	210		10ms Sine pulse, rated $V_{RRM}$ applied	
	250	10ms Sine pulse, no voltage reapplied		
$I^2t$ Max. $I^2t$ for fusing	220	$A^2s$	10ms Sine pulse, rated $V_{RRM}$ applied	
	310		10ms Sine pulse, no voltage reapplied	
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing	3100	$A^2\sqrt{s}$	$t = 0.1$ to 10ms, no voltage reapplied	
$V_{TM}$ Max. On-state Voltage Drop	1.25	V	@ 16A, $T_J = 25^\circ\text{C}$	
$r_t$ On-state slope resistance	12.0	$m\Omega$	$T_J = 125^\circ\text{C}$	
$V_{T(TO)}$ Threshold Voltage	1.0	V		
$I_{RM}/I_{DM}$ Max. Reverse and Direct Leakage Current	0.5	mA	$T_J = 25^\circ\text{C}$	$V_R = \text{rated } V_{RRM} / V_{DRM}$
	5.0		$T_J = 125^\circ\text{C}$	
$I_H$ 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	$V/\mu s$		
$di/dt$ Max. rate of rise of turned-on Current	150	$A/\mu s$		

### Triggering

Parameters	25TTS..	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	60	mA	Anode supply = 6V, resistive load, $T_J = -10^\circ\text{C}$
	45		Anode supply = 6V, resistive load, $T_J = 25^\circ\text{C}$
	20		Anode supply = 6V, resistive load, $T_J = 125^\circ\text{C}$
$V_{GT}$ Max. required DC Gate Voltage to trigger	2.5	V	Anode supply = 6V, resistive load, $T_J = -10^\circ\text{C}$
	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	0.25		$T_J = 125^\circ\text{C}$ , $V_{DRM} = \text{rated value}$
$I_{GD}$ Max. DC Gate Current not to trigger	2.0	mA	$T_J = 125^\circ\text{C}$ , $V_{DRM} = \text{rated value}$

### Switching

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

### Thermal-Mechanical Specifications

Parameters	25TTS..	Units	Conditions
$T_J$ Max. Junction Temperature Range	-40 to 125	$^\circ\text{C}$	
$T_{stg}$ Max. Storage Temperature Range	-40 to 125		
$R_{thJC}$ Max. Thermal Resistance Junction to Case	1.1	$^\circ\text{C/W}$	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		

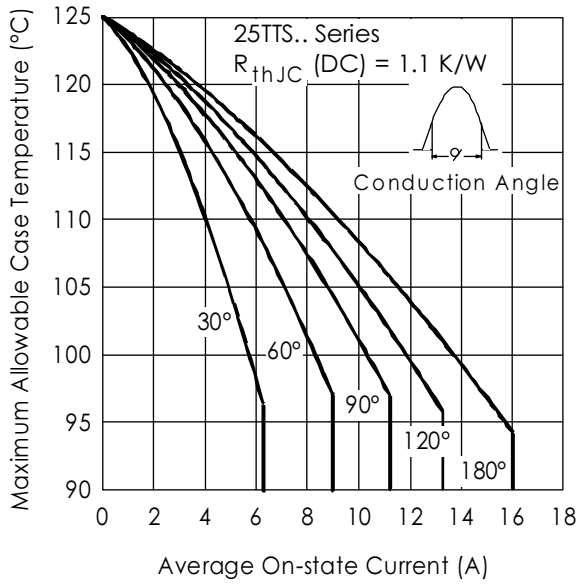


Fig. 1 - Current Rating Characteristics

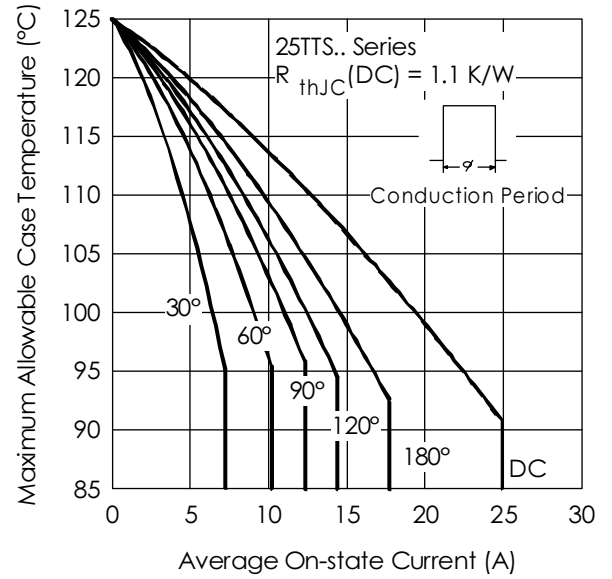


Fig. 2 - Current Rating Characteristics

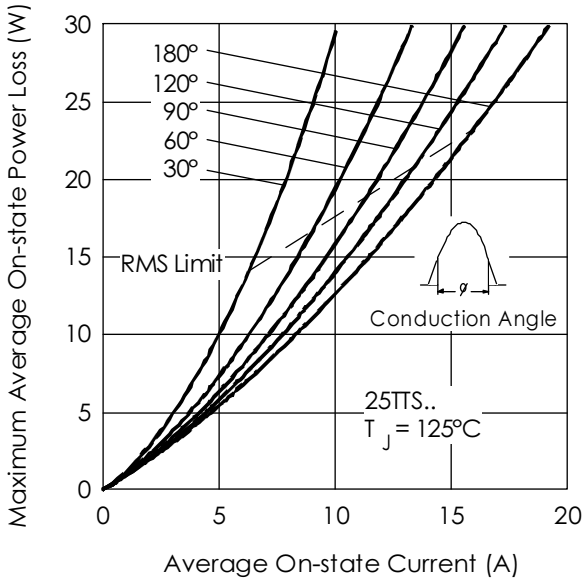


Fig. 3 - On-state Power Loss Characteristics

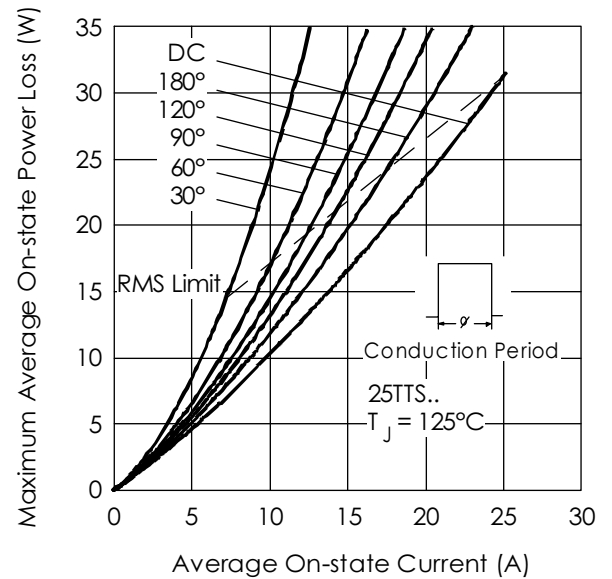


Fig. 4 - On-state Power Loss Characteristics

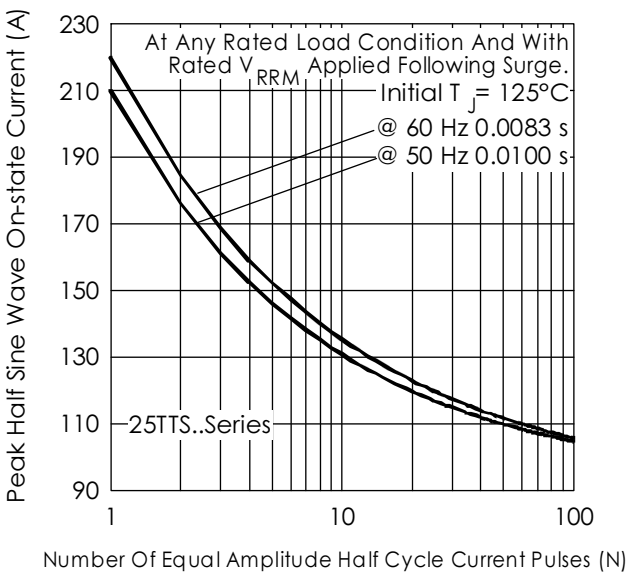


Fig. 5 - Maximum Non-Repetitive Surge Current

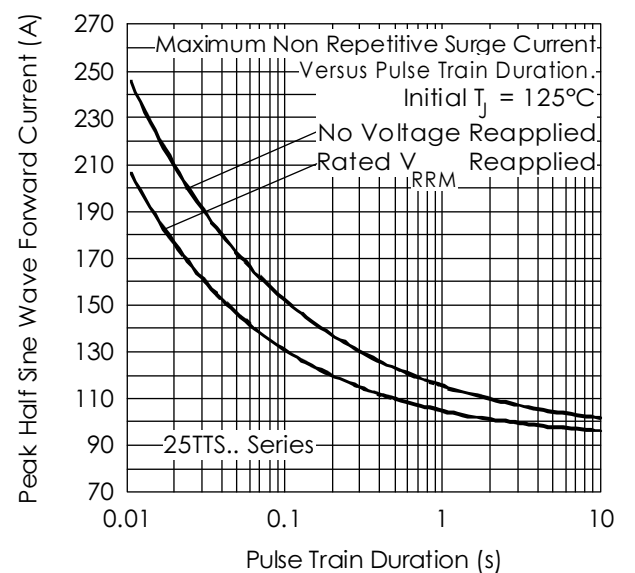


Fig. 67 - Maximum Non-Repetitive Surge Current

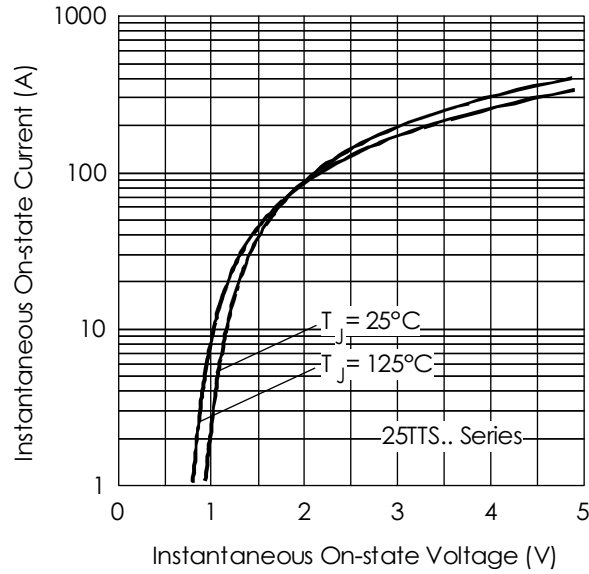


Fig. 7 - On-state Voltage Drop Characteristics

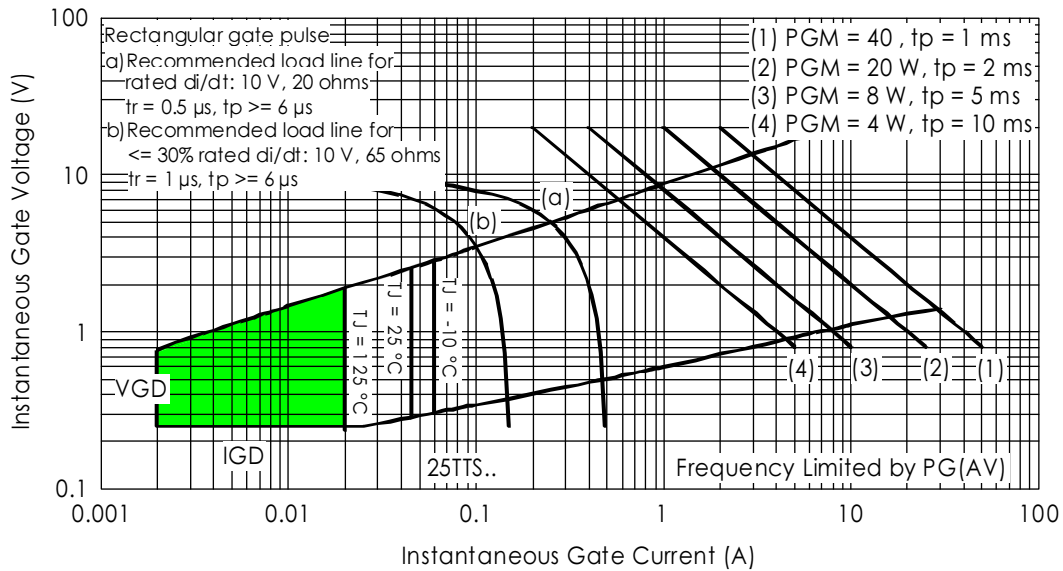


Fig. 8 - Gate Characteristics

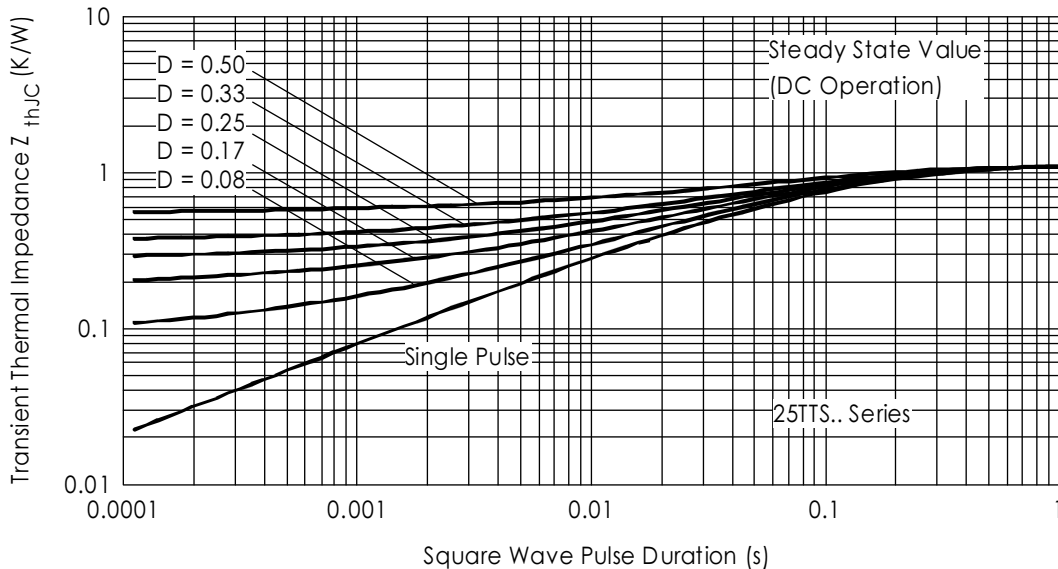
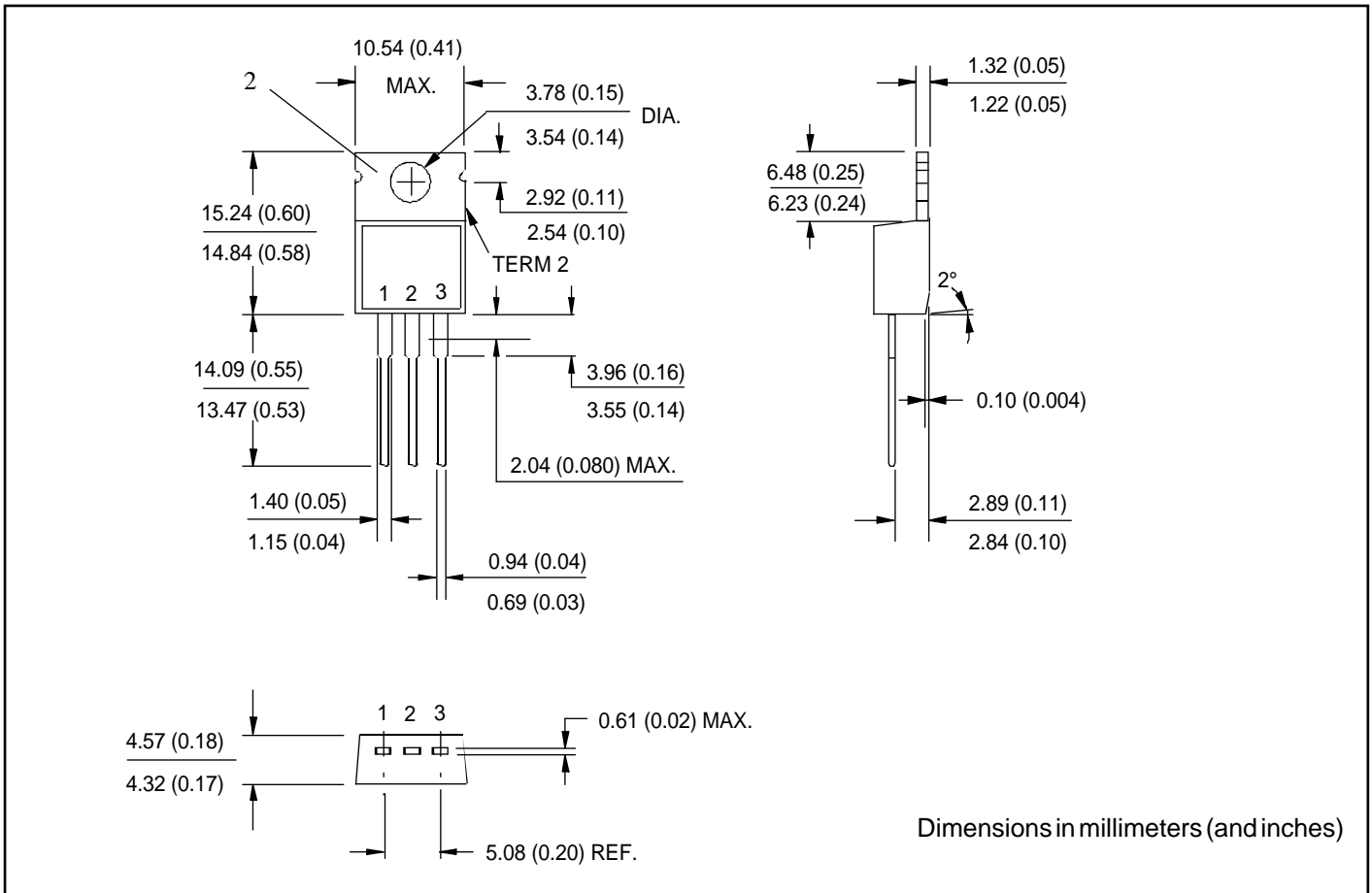


Fig. 9 - Thermal Impedance  $Z_{thJC}$  Characteristics

Outline Table



Ordering Information Table

**Device Code**

25	T	T	S	12
①	②	③	④	⑤

- 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