

Thyristor Surge Suppressors (TSS) Data Sheet

Description

DO-214AC Thyristor solid state protection thyristor protect telecommunications equipment such as modems, line cards, fax machines, and other CPE.

FTR Series devices are used to enable equipment to meet various regulatory requirements including GR 1089, ITU K.20, K.21 and K.45, IEC 60950, UL 60950, and TIA-968 (formerly known as FCC Part 68).

Features

- Cannot be damaged by voltage
- Eliminate hysteresis and heat dissipation typically found with clamping devices
- Eliminate voltage overshoot caused by fast-rising transients
- Are non-degenerative
- Will not fatigue
- Have low capacitance, making them ideal for high-speed transmission equipment
- Meets MSL level 1, per J-STD-020.

Mechanical Data

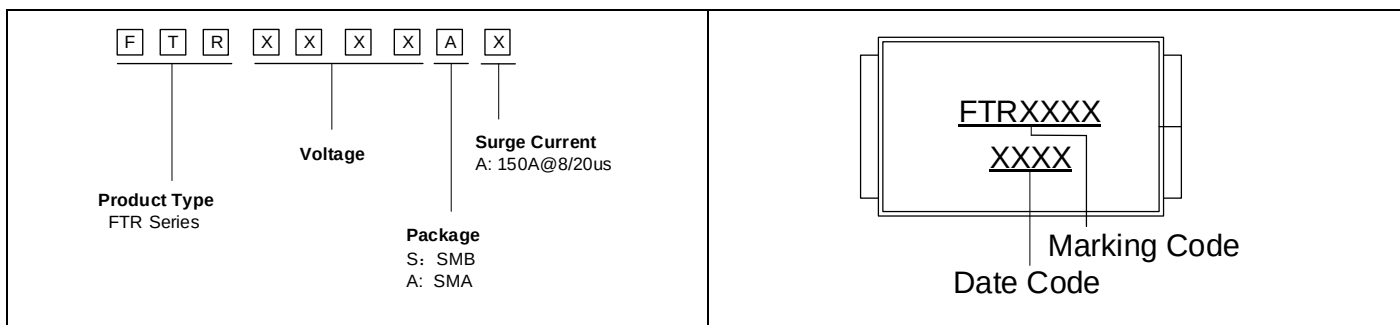
- Case: JEDEC DO-214AA Moulded plastic
- Terminal: solderplated, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes cathode except bi-directional models
- Mounting Position: Any

Thermal Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.

Rating	Symbol	Value	Units
Peak pulse current of at 10/1000µs waveform (Note 1, Fig.3)	I _{PPM}	See Table	Amps
Operating junction and Storage Temperature Range.	T _J , T _{STG}	-55 to +125	°C
Typical thermal resistance junction to ambient	R _{θJA}	120	°C/W

Partnumber code



Dimensions (DO-214AC/SMA)

Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
L	3.90	4.50	0.154	0.177
D	2.40	2.80	0.094	0.110
D1	1.30	1.70	0.051	0.067
T	4.80	5.30	0.189	0.208
T1	0.76	1.52	0.030	0.060
d	0.10	0.20	0.003	0.008
H	2.00	2.50	0.078	0.098

Electrical Characteristics (T_A=25°C)

Part Number	V _{DRM} (V)	V _S (V)	V _T (V)	I _{DRM} (μA)	I _S (mA)	I _T (A)	I _H (mA)	C _O (pF)	Marking
FTR0800AA	6	25	4	5	800	2.2	50	50	FTR008A
FTR0300AA	25	40	4	5	800	2.2	50	70	FTR03A
FTR0640AA	58	77	4	5	800	2.2	150	50	FTR06A
FTR0720AA	65	88	4	5	800	2.2	150	50	FTR07A
FTR0900AA	75	98	4	5	800	2.2	150	45	FTR09A
FTR1100AA	90	130	4	5	800	2.2	150	45	FTR11A
FTR1300AA	120	160	4	5	800	2.2	150	45	FTR13A
FTR1500AA	140	180	4	5	800	2.2	150	40	FTR15A
FTR1800AA	170	220	4	5	800	2.2	150	40	FTR18A
FTR2300AA	190	260	4	5	800	2.2	150	35	FTR23A
FTR2600AA	220	300	4	5	800	2.2	150	35	FTR26A
FTR3100AA	275	350	4	5	800	2.2	150	30	FTR31A
FTR3500AA	320	400	4	5	800	2.2	150	30	FTR35A

Notes: Off-state capacitance(C_O) is measured at 1 MHz with a 2V bias and is typical value.

Surge Rating

Series	I _{PP} 2×10μs (A)	I _{PP} 8×20μs (A)	I _{PP} 10×160μs (A)	I _{PP} 10×560μs (A)	I _{PP} 10×1000μs (A)	V _{PP} 10×1000μs (KV)	I _{TSM} 60Hz (A)	di/dt (A/μs)
A	150	150	90	50	45	2	20	500

Electrical Parameters

Parameter	Parameter
V_{DRM}	Peak Off-state Voltage – maximum voltage that can be applied while maintaining off state
V_S	Switching Voltage – maximum voltage prior to switching to on state
V_T	On-state Voltage – maximum voltage measured at rated on-state current
I_{DRM}	Leakage Current – maximum peak off-state current measured at V_{DRM}
I_S	Switching Current – maximum current required to switch to on state
I_T	On-state Current – maximum rated continuous on-state current
I_H	Holding Current – typical current required to maintain on state
C_o	Off-state Capacitance – typical capacitance measured in off state
I_{PP}	Peak Pulse Current – maximum rated peak impulse current

Ratings and Characteristic Curves ($T_A=25^\circ\text{C}$ unless otherwise noted)

Figure 1. V/I Characteristics

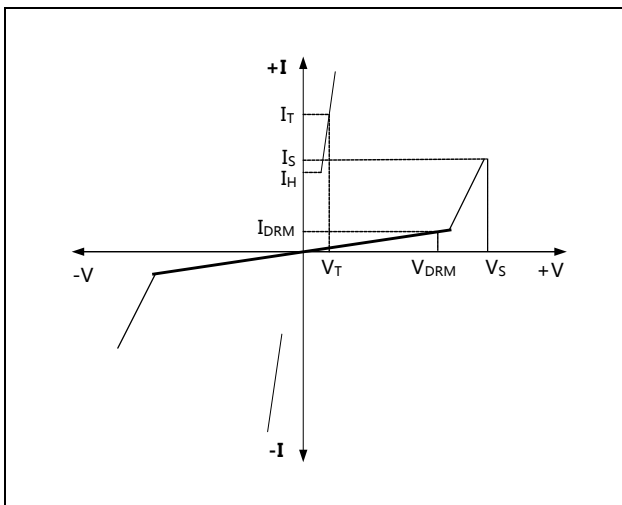


Figure 3. Pulse Waveform

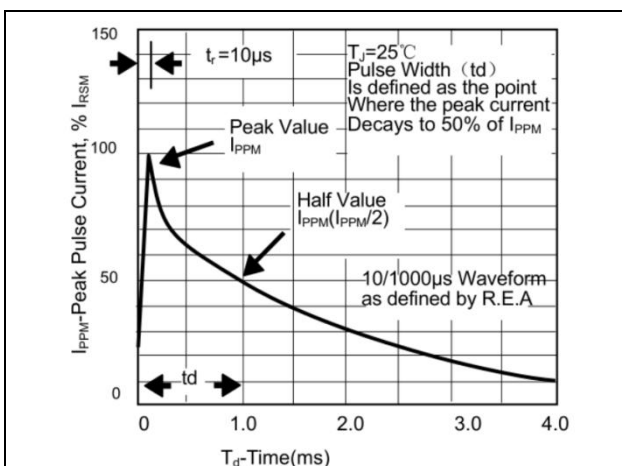


Figure 2. Normalized V_S Change versus Junction Temperature

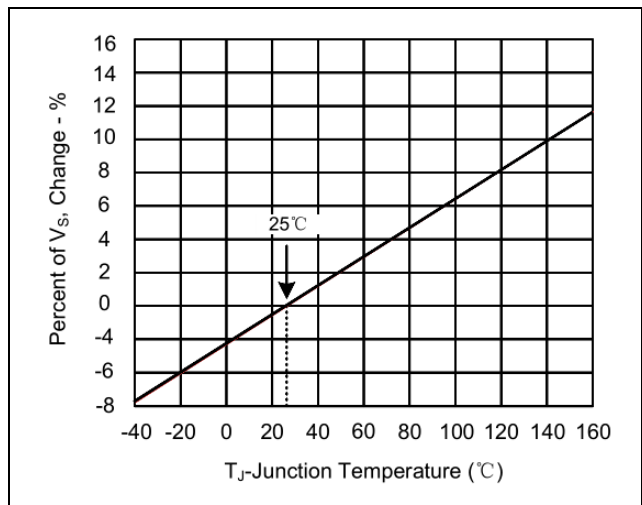
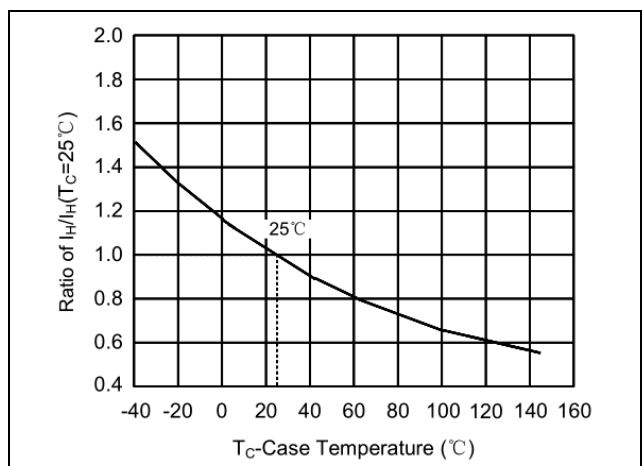
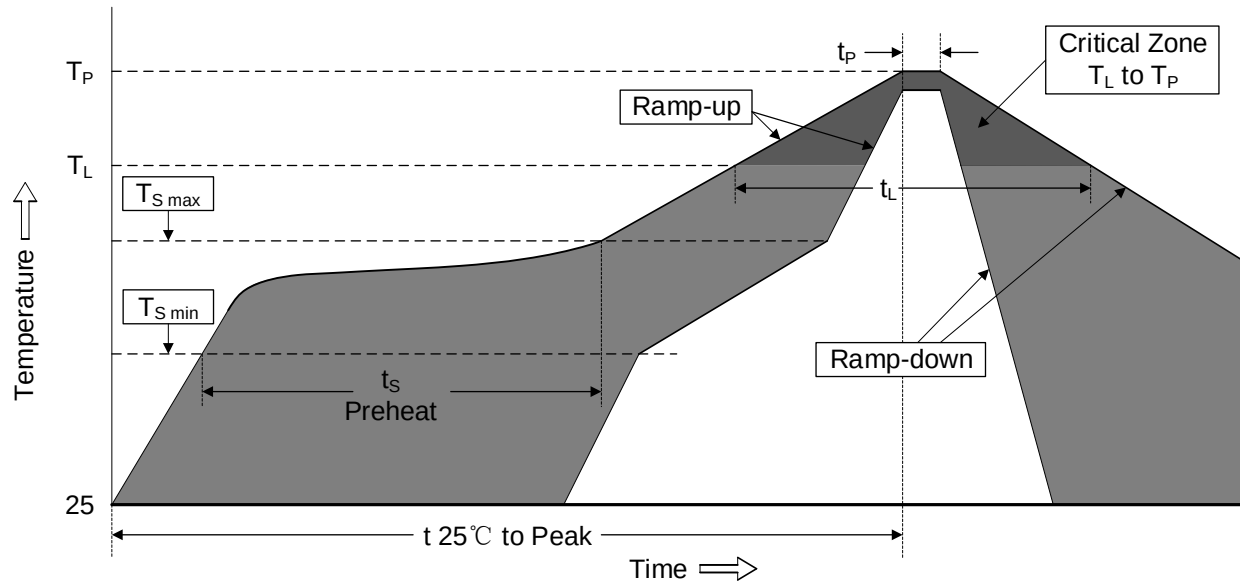


Figure 4. Normalized DC Holding Current versus Case Temperature



Recommended Soldering Conditions

Reflow Soldering



Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3°C/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max) (t_s)	150°C 200°C 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	3°C/second max.
Time maintained above: -Temperature (T_L) -Time (t_L)	217°C 60-150 seconds
Peak Temperature (T_P)	260°C
Time within 5°C of actual Peak Temperature (t_p)	20-40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

Packaging

Tape	Symbol	Dimension (mm)
	W	12.00±0.30
	P0	4.00±0.10
	P1	4.00±0.10
	P2	2.00±0.10
	D0	Φ1.50±0.05
	D1	Φ1.50±0.05
	E	1.75±0.10
	F	5.50±0.10
	A0	2.79±0.10
	B0	5.33±0.10
	K0	2.55±0.05
	T	0.25±0.10
Reel	D5	Φ330.0±2.0
	D6	Φ13.5±0.5
	H	2.5±0.5
	W2	16.0±1.0
	Quantity: 5000PCS	

