P0080EC - P5000EC Series - TO-92 ROHS

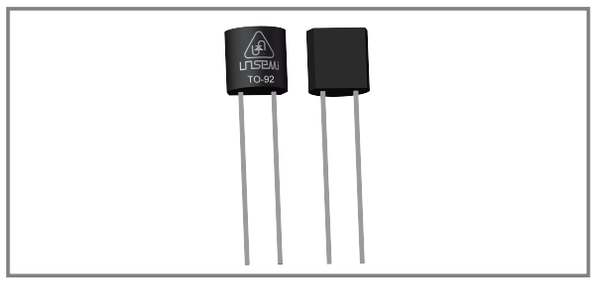
@10/700μS，6KV

Thyristor Surge Suppressors (TSS)

www.unsemi.com.tw

Description

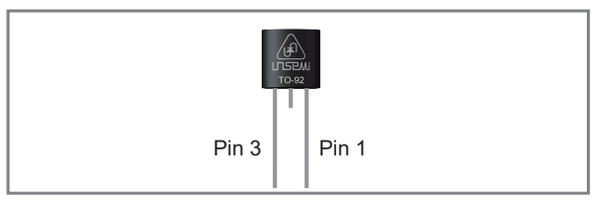
P0080EC - P5000EC Series are designed to protect broadband equipment such as modems, line card, CPE and DSL from damaging over-voltage transients.
The series provides a surface mount solution that enables equipment to comply with global regulatory standards.



Features and Benefits

- Low voltage overshoot
- Low on-state voltage
- Does not degrade surge capability after multiple surge events within limit
- Fails short circuit when surged in excess of ratings
- Low Capacitance

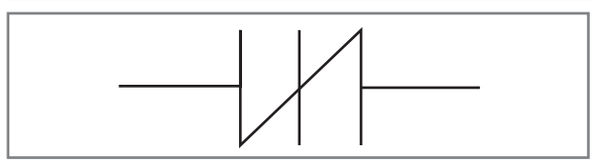
Pinout Designation



Applicable Global Standards

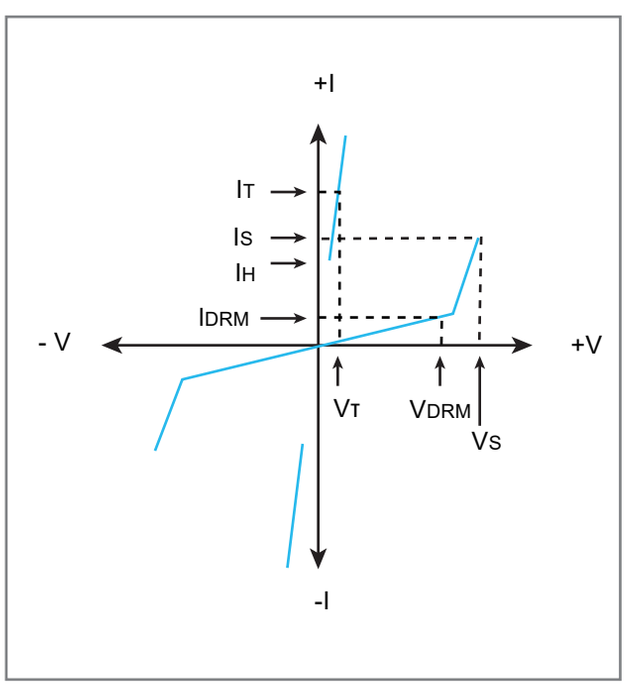
- TIA-968-A / TIA-968-B
- ITU K.20/21 Enhanced level
- ITU K.20/21 Basic Level
- GR 1089 Inter building
- IEC 61000-4-5
- YD/T 1082
- YD/T 993
- YD/T 950

Schematic Symbol



Electrical Parameters

Parameter	Definition
I_S	**Switching Current -** maximum current required to switch to on state
I_{DRM}	**Leakage Current -** maximum peak off-state current measured at VDRM
I_H	**Holding Current -** minimum current required to maintain on state
I_T	**On-state Current -** maximum rated continuous on-state bcurrent
V_S	**Switching Voltage -** maximum voltage prior to switching to on stat
V_{DRM}	**Peak Off-state Voltage -** maximum voltage that can be applied while maintaining off state
V_T	**On-state Voltage -** maximum voltage measured at rated on-state current
C_0	**Off-state Capacitance -** typical capacitance measured in off state



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Electrical Characteristics

Part Number	Marking	V_{DRM} @I_{DRM}=5μA	I_{DRM}	V_S @100V/μS	I_S	V_T @I_T=2.2A	I_T	I_H	C_O @1MHz
		V Min.	μA Max.	V Max.	mA Max.	V Max.	A Max.	mA Min.	pF Typ.
P0080EC	P0080EC	6	5	25	800	4	2.2	50	110
P0300EC	P0300EC	25	5	40	800	4	2.2	50	110
P0640EC	P0640EC	58	5	77	800	4	2.2	150	100
P0720EC	P0720EC	65	5	88	800	4	2.2	150	100
P0900EC	P0900EC	75	5	98	800	4	2.2	150	90
P1100EC	P1100EC	90	5	130	800	4	2.2	150	90
P1300EC	P1300EC	120	5	160	800	4	2.2	150	90
P1500EC	P1500EC	140	5	180	800	4	2.2	150	85
P1800EC	P1800EC	170	5	220	800	4	2.2	150	85
P2000EC	P2000EC	180	5	220	800	4	2.2	150	85
P2300EC	P2300EC	190	5	260	800	4	2.2	150	80
P2600EC	P2600EC	220	5	300	800	4	2.2	150	80
P3100EC	P3100EC	275	5	350	800	4	2.2	150	65
P3500EC	P3500EC	320	5	400	800	4	2.2	150	65
P3800EC	P3800EC	360	5	460	800	4	2.2	150	30
P4200EC	P4200EC	400	5	520	800	4	2.2	150	30
P4500EC	P4500EC	420	5	540	800	4	2.2	150	30
P5000EC	P5000EC	440	5	600	800	4	2.2	150	30

Notes:
- Absolute maximum ratings measured at TA= 25ºC (unless otherwise noted).
- Devices are bi-directional.

Surge Ratings

Series	2/10μS[1]	8/20μS[1]	10/160μS[1]	10/560μS[1]	10/1000μS[1]	5/320μS[1]	I_{TSM} 50/60Hz	di/dt
	2/10μS[2]	1.2/50μS[2]	10/160μS[2]	10/560μS[2]	10/1000μS[2]	10/700μS[2]		
	A min	A min	A min	A min	A min	A min	A min	Amps/μs max
C	500	400	200	150	100	150	50	500

Notes:
1. Current waveform in μs
2. Voltage waveform in μs

- Peak pulse current rating (IPP) is repetitive and guaranteed for the life of the product.
- IPP ratings applicable over temperature range of -40ºC to +85ºC
- The device must initially be in thermal equilibrium with -40°C < TJ < +150°C

Thermal Considerations

Package	Symbol	Parameter	Value	Unit
TO-92 	T_J	Operating Junction Temperature Range	- 40 to +150	°C
	T_S	Storage Temperature Range	- 40 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	90	°C/W

Characteristic Curves

Figure 1 - V- I Characteristics

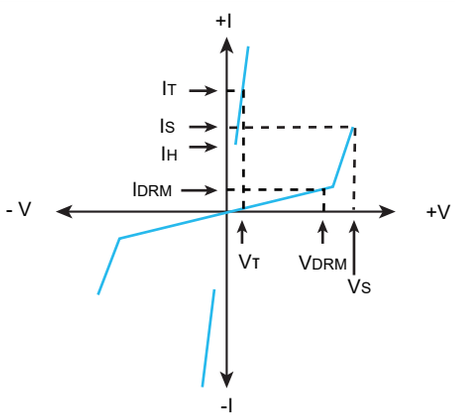


Figure 2 - $t_r \times t_d$ Pulse Waveform

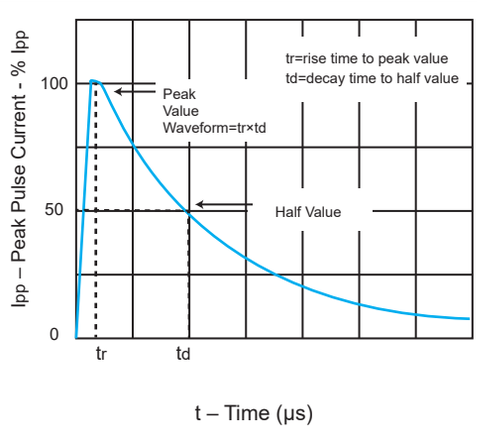


Figure 3 - Normalized VS Change Versus Junction Temperature

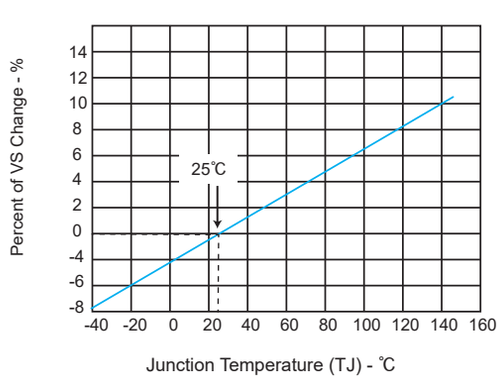
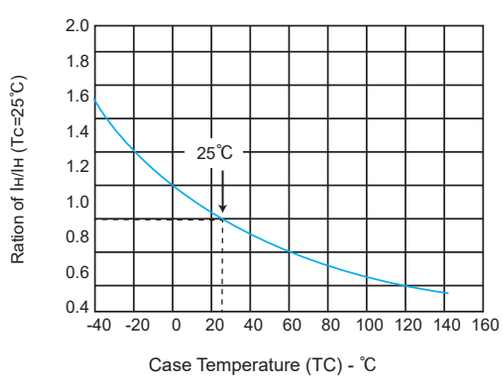
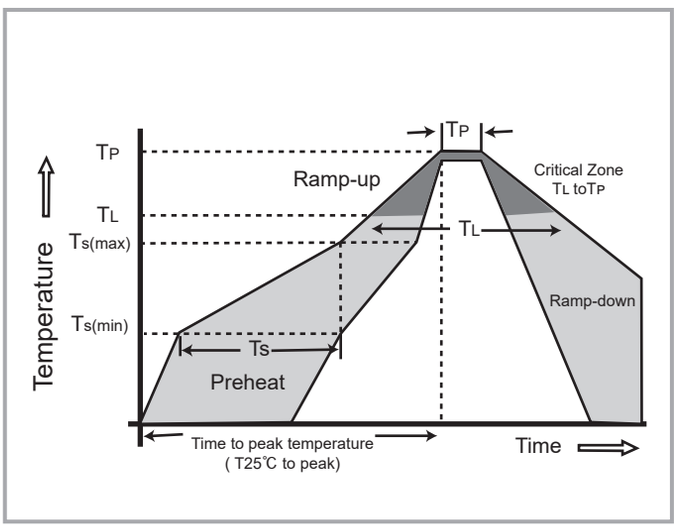


Figure 4 - Normalized DC Holding Current Versus Case Temperature

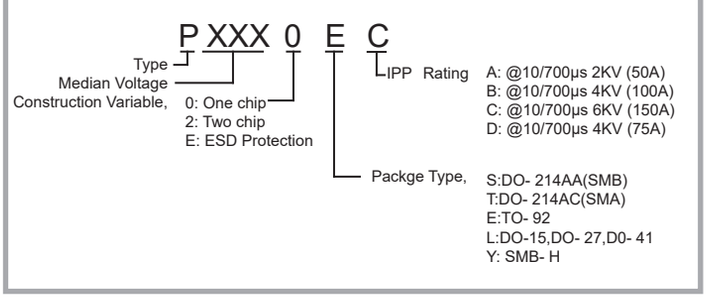


Soldering Parameters

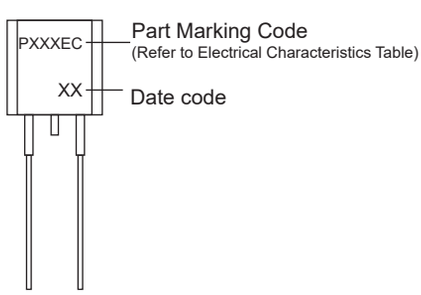


Reflow Condition		Lead–free assembly
Pre Heat	-Temperature Min (Ts(min))	+150°C
	-Temperature Max (Ts(max))	+200°C
	- Time (min to max) (Ts)	60 -180 Seconds
Average ramp up rate (Liquidus Temp TL) to peak		3°C/Second max
Ts(max) to TL - Ramp-up Rate		5°C/Second max
Reflow	- Temperature (TL) (Liquidus)	217°C
	- Time (min to max) (Ts)	60 -150 Seconds
Peak Temperature (TP)		260 +0/-5°C
Time within 5°C of actual peak Temperature (TP)		30 Seconds Max
Ramp-down Rate		6°C/Second Max
Time 25°C to peak Temperature (TP)		8 minutes Max
Do not exceed		+260°C

Part Numbering



Part Marking



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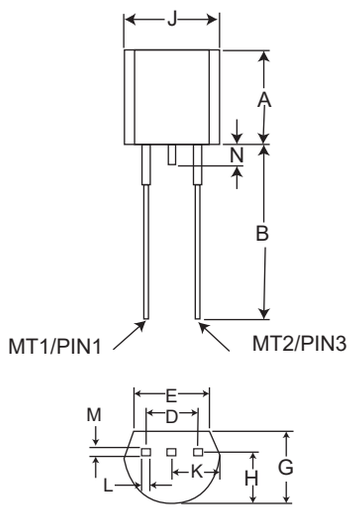
Dimensions TO-92



The T0-92 is designed to meet mechanical standards as set forth in JEDEC publication number 95.

Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.176	0.196	4.47	4.98
B	0.500		12.70	
D	0.095	0.105	2.41	2.67
E	0.150		3.81	
G	0.135	0.145	3.43	3.68
H	0.088	0.096	2.23	2.44
J	0.176	0.186	4.47	4.73
K	0.088	0.096	2.23	2.44
L	0.013	0.019	0.33	0.48
M	0.013	0.017	0.33	0.43
N		0.060		1.52

All leads are insulated from case. Case is electrically non-conductive. (Rated at 1600 V(AC) RMS for one minute from leads to case over the operating temperature range.)

Mold flash shall not exceed 0.13 mm per side.

Packaging

Part Number	Description	Quantity
Pxxx0EC	TO-92 Bulk Pack	1000

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ROHS

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