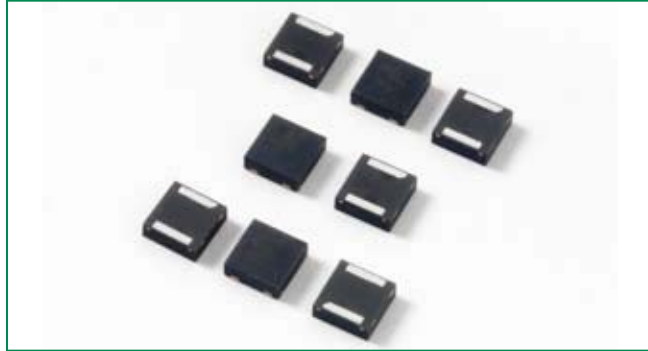


RoHS TwinChip™ SDP Series



Description

The new SIDACtor based Broadband Driver Protector provides overvoltage protection on the secondary side of the coupling transformer used in xDSL driver circuits. This SDP0242Q12F provides a fast switching, robust, solution that is referenced to neither ground nor power. This prevents the surge events from being dumped into these rails. The integrated TwinChip™ design reduces any negative solid-state-effects on the broadband signals.

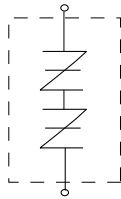
Features & Benefits

- RoHS compliant
- QFN (Quad Flatpak No-lead) surface mount package
- Low insertion loss
- Low log linear voltage dependant capacitance
- Bidirectional transient voltage protection
- Crowbarring speed of nanoseconds
- Teccor® branded SIDACtor Technology
- TwinChip™ Technology
- Small footprint/low profile

Agency Approvals

Agency	Agency File Number
	E133083

Schematic Symbol



Protection Solution for

- YD/T 950
- YD/T 993
- GR1089 Intra-building
- GR1089 Inter-building
- IEC 61000-4-5
- ITU K.20/21 Basic Level
- ITU K.20/21 Enhanced Level
- TIA-968-A

Electrical Characteristics

Part Number	Marking	$V_{DRM} @ I_{DRM}=5\mu A$	$V_S @ 100V/\mu S$	I_H	I_S	$I_T @ V_T$	$V_T @ I_T = 2.2 \text{ amp}$	Capacitance @ 1MHz @ 2V bias	
		Volts	Volts	mAmps	mAmps	Amps	Volts	pF	
		Min	Max	Min			Max	Min	Max
SDP0242Q12FLRP	SDP24F	16	43	30	800	2.2	8	10	15

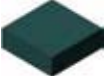
- All measurements are made at an ambient temperature of 25°C. I_{pp} applies to -40°C through +85°C temperature range.
- I_{pp} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed SIDACtor device are bidirectional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_S is measured at 100V/μs.
- Off-state capacitance is measured at 1MHz with a 2V bias.
- Specifications are subject to change without notice.

Surge Ratings

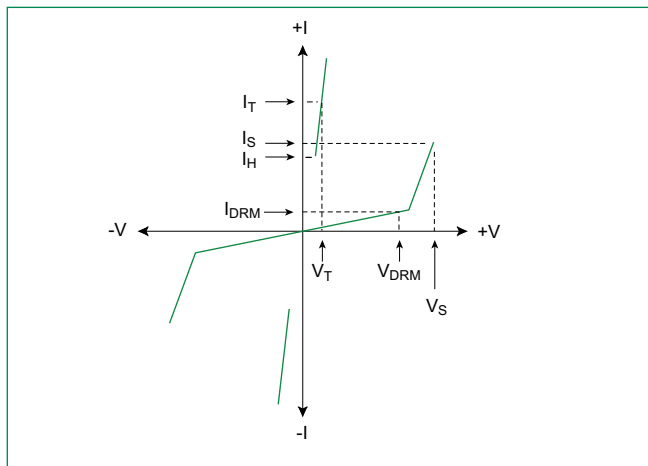
Series	I_{PP}			
	2x10 μ s	1.2x50 μ s/8x20 μ s	10x700/5x310 μ s	10x1000 μ s
	Amps Min	Amps Min	Amps Min	Amps Min
F	100	80	375	30

• The lightning surge may be repeated after the device returns to its initial conditions.

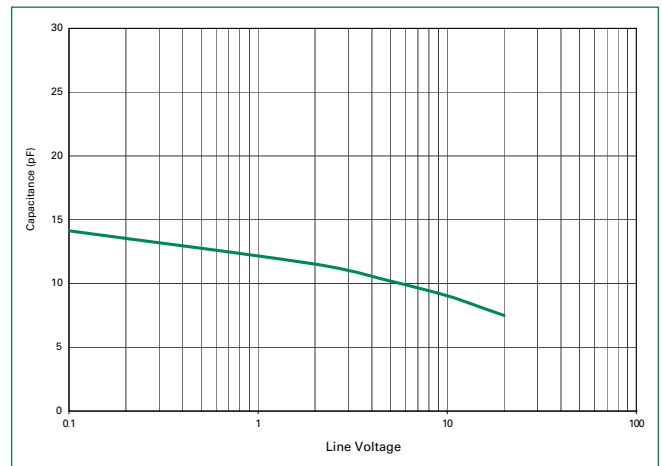
Thermal Considerations

Package	Symbol	Parameter	Value	Unit
	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	120	°C/W

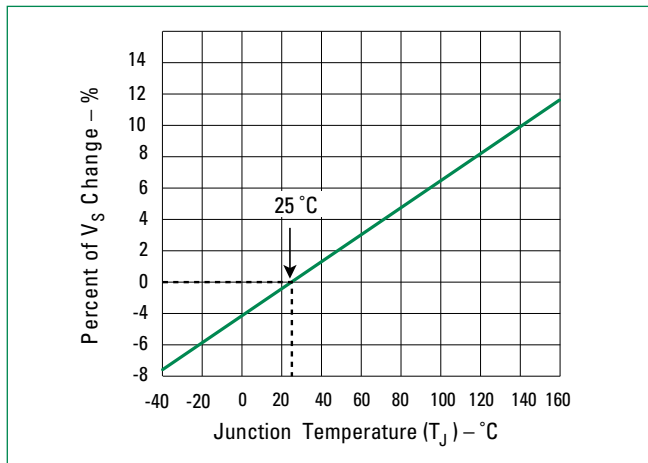
V-I Characteristics



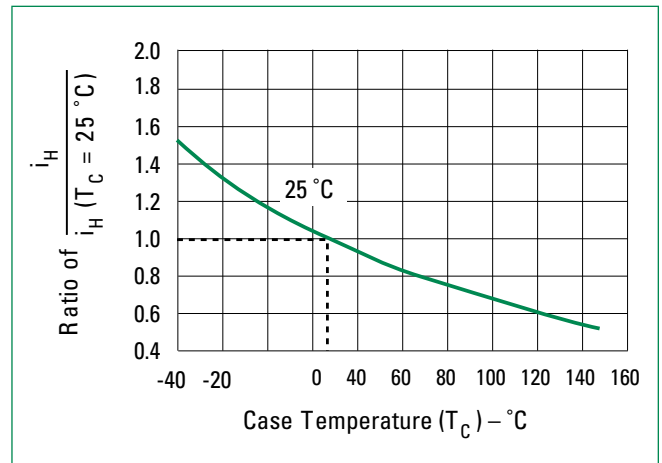
Capacitance and Bias Voltage



Normalized V_S Change Vs. Junction Temperature



Normalized DC Holding Current Vs. Case Temperature

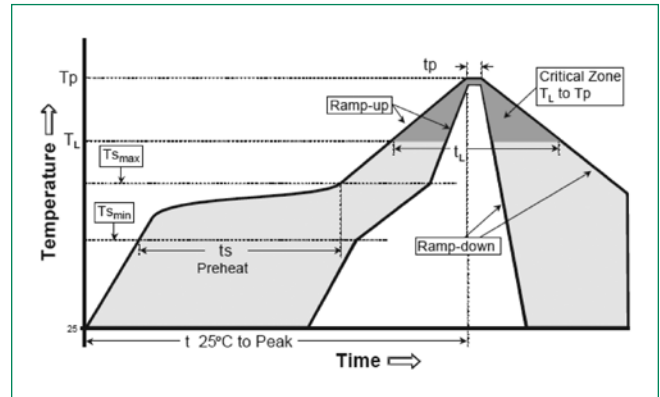


Soldering Parameters

Reflow Condition		Pb – Free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak)		3°C/second max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t_p)		30 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_p)		8 minutes max
Do not exceed		260°C

Physical Specifications

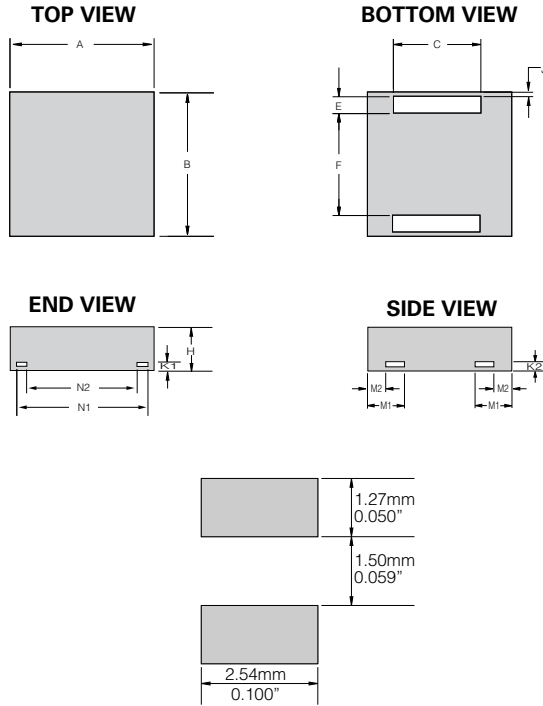
Terminal Material	Copper Alloy
Terminal Finish	100% Matte Tin Plated
Body Material	UL recognized epoxy meeting flammability classification 94V-0



Environmental Specifications

High Temperature Voltage Blocking	MIL-STD-750: Method 1040, Condition A 80% min V_{DRM} (VAC-peak), 150°C, 504 hours
Temperature Cycling	MIL-STD-750: Method 1051 -65°C to 150°C, 15-minute dwell, 100 cycles
Biased Temperature & Humidity	EIA/JEDEC: JESD22-A101 52VDC, 85°C, 85%RH, 1008 hours
High Temperature Storage	MIL-STD-750: Method 1031 150°C, 1008 hours
Low Temperature Storage	-65°C, 1008 hours
Thermal Shock	MIL-STD-750: Method 1056 0°C to 100°C, 5-minute dwell, 10-second transfer, 10 cycles
Autoclave (Pressure Cooker Test)	EIA/JEDEC: JESD22-A102 121°C, 100%RH, 2atm, 168 hours
Resistance to Solder Heat	MIL-STD-750: Method 2031 260°C, 10 seconds

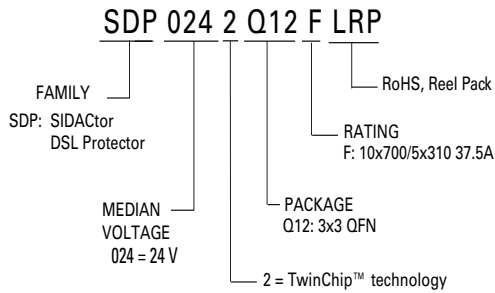
Dimensions



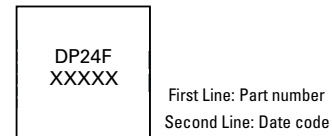
Dimensions	Inches			Millimeters		
	Min	Typ	Max	Min	Typ	Max
A	0.116	0.118	0.120	2.950	3.000	3.050
B	0.116	0.118	0.120	2.950	3.000	3.050
C	0.077	0.079	0.081	1.950	2.000	2.050
E	0.013	0.015	0.017	0.335	0.385	0.435
F	0.078	0.080	0.082	1.980	2.030	2.080
H	0.037	0.039	0.041	0.950	1.000	1.050
J	0.002	0.004	0.006	0.050	0.100	0.150
K1	0.006	0.008	0.001	0.150	0.200	0.250
K2	0.006	0.008	0.001	0.150	0.200	0.250
M1	0.028	0.030	0.031	0.700	0.750	0.800
M2	0.013	0.015	0.017	0.330	0.380	0.430
N1	0.097	0.099	0.101	2.470	2.520	2.570
N2	0.084	0.086	0.088	2.130	2.180	2.230

Recommended solder pad layout
(Reference Only)

Part Numbering System



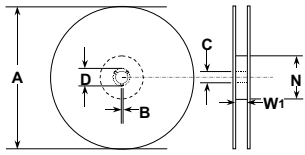
Part Marking System



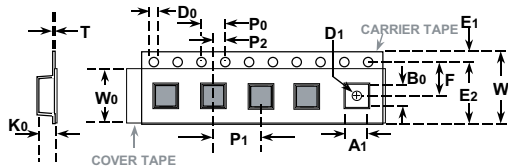
Packaging Options

Package	Description	Packaging Quantity	Added Suffix	Industry Standard
Q12	QFN 3x3	5000	RP	EIA-481-1

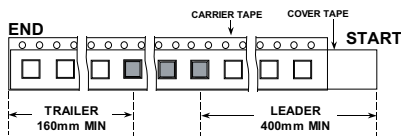
Tape and Reel Specification



Reel Dimension



Tape Dimension Items



Leader and Trailer dimension of the tape

Symbols	Description	Inches		Millimeters	
		Minimum	Maximum	Minimum	Maximum
A	Reel Diameter	N/A	12.992	N/A	330.0
B	Drive Spoke Width	0.059	N/A	1.50	N/A
C	Arbor Hole Diameter	0.504	0.531	12.80	13.50
D	Drive Spoke Diameter	0.795	N/A	20.20	N/A
N	Hub Diameter	1.969	N/A	50.00	N/A
W1	Reel Inner Width at Hub	0.488	0.567	12.40	14.40
A0	Pocket Width at bottom	0.126	0.134	3.20	3.40
B0	Pocket Length at bottom	0.126	0.134	3.20	3.40
D0	Feed Hole Diameter	0.059	0.063	1.50	1.60
D1	Pocket Hole Diameter	0.059	N/A	1.50	N/A
E1	Feed hole Position 1	0.065	0.073	1.65	1.85
E2	Feed hole Position 2	0.400	0.408	10.15	10.35
F	Feed hole center-Pocket hole	0.215	0.219	5.45	5.55
K0	Pocket Depth	0.043	0.051	1.10	1.30
P0	Feed hole Pitch	0.153	0.161	3.90	4.10
P1	Component Spacing	0.311	0.319	7.90	8.10
P2	Feed hole center-Pocket hole	0.077	0.081	1.95	2.05
T	Carrier Tape Thickness	0.010	0.014	0.25	0.35
W	Embossed Carrier Tape Width	0.453	0.484	11.50	12.30
W0	Cover Tape Width	0.358	0.366	9.10	9.30