

### Features

- Uni-Directional ESD Protection of One Line
- High Peak Pulse Current Capability
- Halogen Free. "Green" Device (Note 1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

### Maximum Ratings

- Operating Junction Temperature Range: -55°C to +125°C
- Storage Temperature Range: -55°C to +150°C



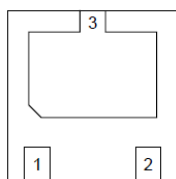
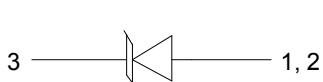
MCC Part Number	Device Marking
ESD1051P4	5101 V10
ESD1251P4	5101 V12
ESD1551P4	5101 V15
ESD1851P4	5101 V18
ESD2451P4	5101 V24

IEC61000-4-2 (ESD)	Air Contact	±30KV ±30KV
IEC61000-4-4 (EFT) (5/50ns)		80A
Peak Pulse Power (8/20µs)	P <sub>PK</sub>	4500W

Note :

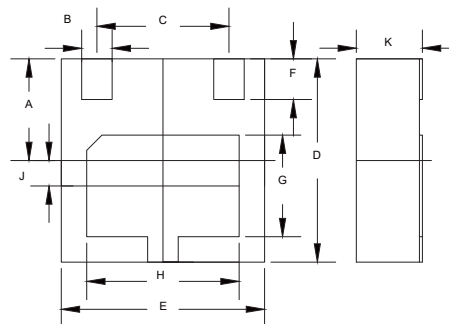
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

### Internal Structure



Transparent top view

### DFN2020-3L



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.037	0.041	0.950	1.050	
B	0.010	0.014	0.250	0.350	
C	0.051		1.30		TYP.
D	0.075	0.083	1.900	2.100	
E	0.075	0.083	1.900	2.100	
F	0.014	0.018	0.350	0.450	
G	0.035	0.043	0.900	1.100	
H	0.055	0.063	1.400	1.600	
J	0.008	0.012	0.200	0.300	
K	-	0.026	-	0.650	

**Electrical Characteristics @ 25°C (Unless Otherwise Specified)**

**ESD1051P4**

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Working Voltage	$V_{RWM}$				10	V
Reverse Breakdown Voltage	$V_{BR}$	$I_T=1mA$	10.5	11	12.5	V
Reverse Leakage Current	$I_R$	$V_{RWM}=10V$			1	$\mu A$
Forward Voltage	$V_F$	$I_F=20mA$			1.25	V
Peak Pulse Current	$I_{pp}$	$t_p=8/20\mu s$			205	A
Clamping Voltage	$V_C$	$I_{pp}=205A, t_p=8/20\mu s$		19	21	V
Junction Capacitance	$C_J$	$V_R=0V, f=1MHz$		2150	2600	pF

**ESD1251P4**

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Working Voltage	$V_{RWM}$				12	V
Reverse Breakdown Voltage	$V_{BR}$	$I_T=1mA$	12.5		15	V
Reverse Leakage Current	$I_R$	$V_{RWM}=12V$			0.1	$\mu A$
Forward Voltage	$V_F$	$I_F=20mA$			1.25	V
Peak Pulse Current	$I_{pp}$	$t_p=8/20\mu s$			200	A
Clamping Voltage	$V_C$	$I_{pp}=200A, t_p=8/20\mu s$		22	24	V
Junction Capacitance	$C_J$	$V_R=0V, f=1MHz$		1650	2000	pF

**ESD1551P4**

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Working Voltage	$V_{RWM}$				15	V
Reverse Breakdown Voltage	$V_{BR}$	$I_T=1mA$	15.5		18	V
Reverse Leakage Current	$I_R$	$V_{RWM}=15V$			0.1	$\mu A$
Forward Voltage	$V_F$	$I_F=20mA$			1.25	V
Peak Pulse Current	$I_{pp}$	$t_p=8/20\mu s$			160	A
Clamping Voltage	$V_C$	$I_{pp}=160A, t_p=8/20\mu s$		26	28	V
Junction Capacitance	$C_J$	$V_R=0V, f=1MHz$		1250	1500	pF

**Electrical Characteristics @ 25°C (Unless Otherwise Specified)**
**ESD1851P4**

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Working Voltage	$V_{RWM}$				18	V
Reverse Breakdown Voltage	$V_{BR}$	$I_T=1mA$	18.5		21	V
Reverse Leakage Current	$I_R$	$V_{RWM}=15V$			0.1	$\mu A$
Forward Voltage	$V_F$	$I_F=20mA$			1.25	V
Peak Pulse Current	$I_{pp}$	$t_p=8/20\mu s$			150	A
Clamping Voltage	$V_C$	$I_{pp}=150A, t_p=8/20\mu s$		31	33	V
Junction Capacitance	$C_J$	$V_R=0V, f=1MHz$		1000	1200	pF

**ESD2451P4**

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Working Voltage	$V_{RWM}$				24	V
Reverse Breakdown Voltage	$V_{BR}$	$I_T=1mA$	24.5		28	V
Reverse Leakage Current	$I_R$	$V_{RWM}=24V$			0.1	$\mu A$
Forward Voltage	$V_F$	$I_F=20mA$			1.25	V
Peak Pulse Current	$I_{pp}$	$t_p=8/20\mu s$			120	A
Clamping Voltage	$V_C$	$I_{pp}=120A, t_p=8/20\mu s$		36	38	V
Junction Capacitance	$C_J$	$V_R=0V, f=1MHz$		800	1000	pF

## Curve Characteristics

Fig. 1 - 8 X 20 $\mu$ s Pulse Waveform

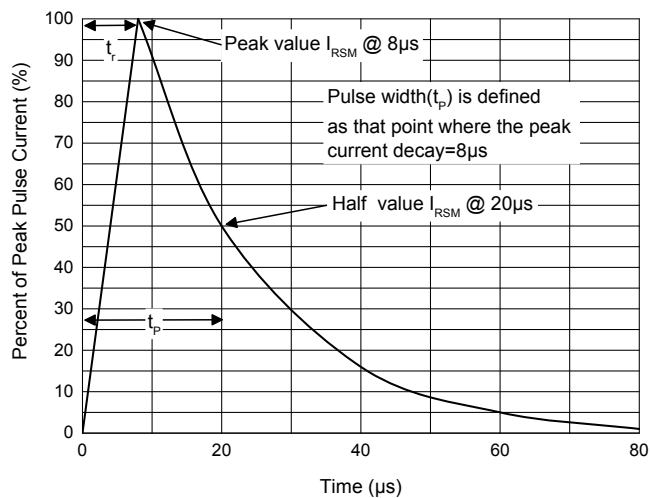


Fig. 2 - Peak Pulse Power Rating Curve

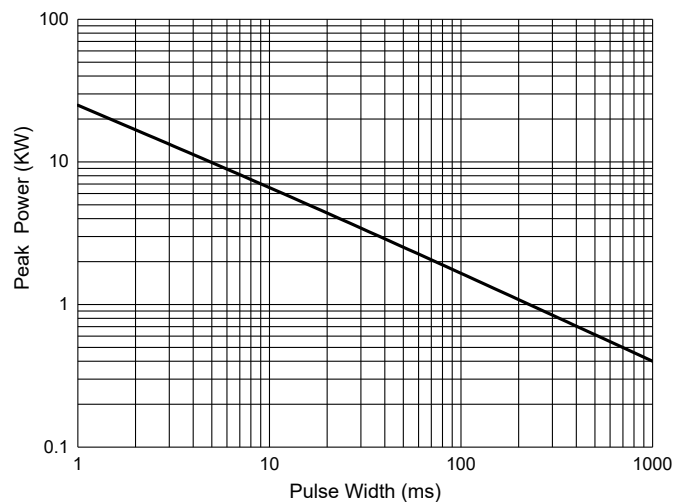
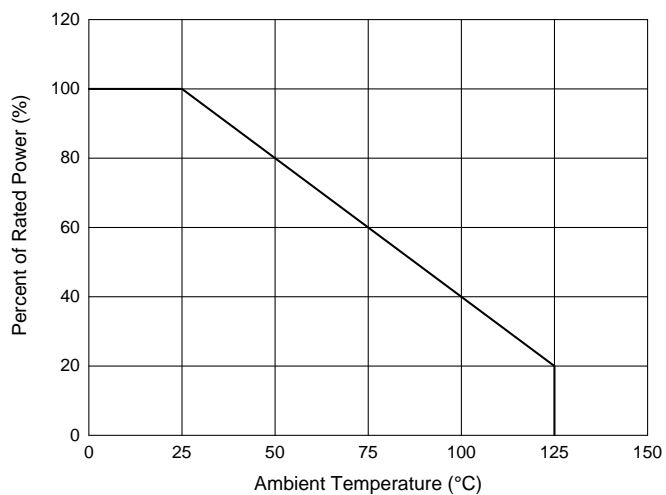


Fig. 3 - Pulse Derating Curve



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel

### \*\*\*IMPORTANT NOTICE\*\*\*

**Micro Commercial Components Corp.** reserves the right to make changes without further notice to any product herein to make corrections, modifications , enhancements , improvements , or other changes . **Micro Commercial Components Corp** . does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights ,nor the rights of others . The user of products in such applications shall assume all risks of such use and will agree to hold **Micro Commercial Components Corp** . and all the companies whose products are represented on our website, harmless against all damages. **Micro Commercial Components Corp**. products are sold subject to the general terms and conditions of commercial sale, as published at <https://www.mccsemi.com/Home/TermsAndConditions>.

### \*\*\*LIFE SUPPORT\*\*\*

MCC's products are not authorized for use as critical components in life support devices or systems without the express written approval of Micro Commercial Components Corporation.

### \*\*\*CUSTOMER AWARENESS\*\*\*

Counterfeiting of semiconductor parts is a growing problem in the industry. Micro Commercial Components (MCC) is taking strong measures to protect ourselves and our customers from the proliferation of counterfeit parts. MCC strongly encourages customers to purchase MCC parts either directly from MCC or from Authorized MCC Distributors who are listed by country on our web page cited below. Products customers buy either from MCC directly or from Authorized MCC Distributors are genuine parts, have full traceability, meet MCC's quality standards for handling and storage. **MCC will not provide any warranty coverage or other assistance for parts bought from Unauthorized Sources.** MCC is committed to combat this global problem and encourage our customers to do their part in stopping this practice by buying direct or from authorized distributors.