Low Capacitance ESD Protection Array

SMD Diodes Specialist

CSRS045V0P
RoHs Device

Features

ESD Protected for 2 high speed I/O ports

IEC61000-4-2 (ESD) ±8kV (Contact) ,±15kV(Air).

IEC61000-4-4 (FET)(5/50ns) Level-3, 20A for I/O

40A for Power.

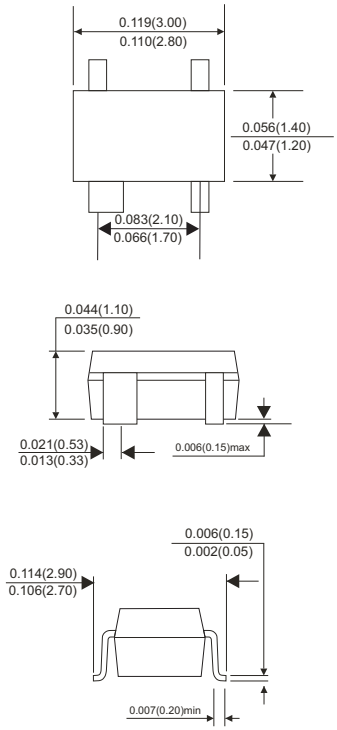
IEC61000-4-5 (Lightning) 6A(8/20uS)

Working voltage: 5V

Low capacitance:1.2pF(Typ.).

Fast turn-on and Low clamping voltage.

SOT-143



Dimensions in inches and (millimeters)

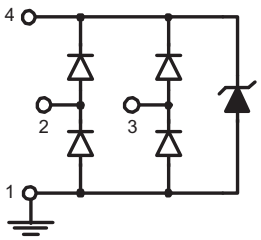
Mechanical data

Case: SOT-143 standard package,
molded plastic.

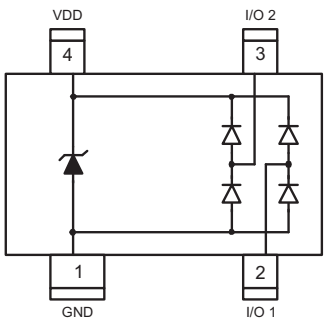
Terminals: Solder plated, solderable per
MIL-STD-750,method 2026.

Weight: 0.0108 gram(approx.).

Circuit Diagram



Pin Configuration



Maximum Rating (at T_A=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse current (tp = 8/20 us)	I_{PP}	6	A
Operating supply voltage	V_{DC}	6	V
ESD per IEC 61000-4-2(Air) **ESD per IEC 61000-4-2(Contact)**	ESD	17 12	kV
ESD per IEC 61000-4-2(Air)(VDD-GND) **ESD per IEC 61000-4-2(Contact)(VDD-GND)**	ESD_{VDD}	30	kV
Lead soldering temperature	T_{SOL}	260 (10 sec)	°C
Operating temperature	T_j	-55 to +85	°C
Storage temperature	T_{STG}	-55 to +150	°C
DC voltage at any I/O pin	V_{IO}	(GND -0.5) to (VDD +0.5)	V

Electrical Characteristics (at T_A=25°C unless otherwise noted)

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Reverse stand-Off voltage	Pin 4 to Pin 1	V_{RWM}			5	V
Reverse leakage current	V_{RWM} = 5 V, Pin 4 to Pin 1	I_R			2	uA
	$V_{PIN\ 4}$ = 5 V, $V_{PIN\ 1}$ = 0V				1	
Diode breakdown voltage	I_R = 1 mA, Pin 4 to Pin 1	V_{BD}	6.2			V
Forward voltage	I_F = 15 mA, Pin 4 to Pin 1	V_F		0.8	1	V
Clamping voltage	I_{PP}= 5 A, tp=8/20us, Any Channel Pin to Ground	V_C		8.1	9	V
	IEC 61000-4-2 +6kV,Contact mode Any channel pin to ground			13		
Junction capacitance	V_{pin4} = 5V,V_{pin1}= 0V, V_{IN}=2.5V, f = 1MHz,Any channel pin to ground	C_j		1.2	1.4	pF
	V_{pin4} = 5V,V_{pin1}= 0V, V_{IN}=2.5V f = 1MHz,Between channel pin			0.1	0.12	
	V_{pin4} = 5V,V_{pin1}= 0V, V_{IN}=2.5V f = 1MHz,Channel_x pin to ground - channel_y pin to ground			0.04	0.06	

RATING AND CHARACTERISTIC CURVES (CSRS045V0P)

Fig. 1 - Power derating curve

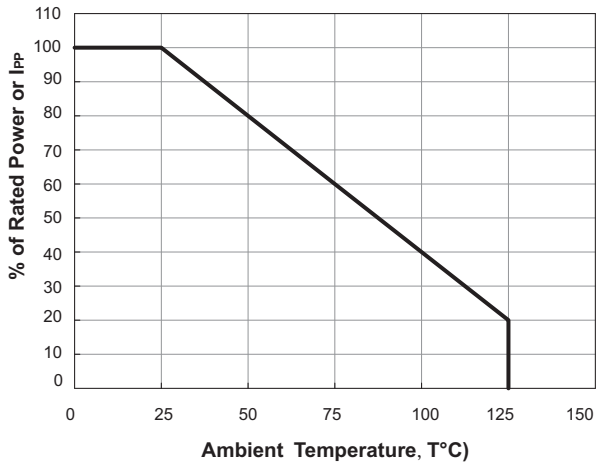


Fig. 2 - Clamping voltage vs. Peak pulse current

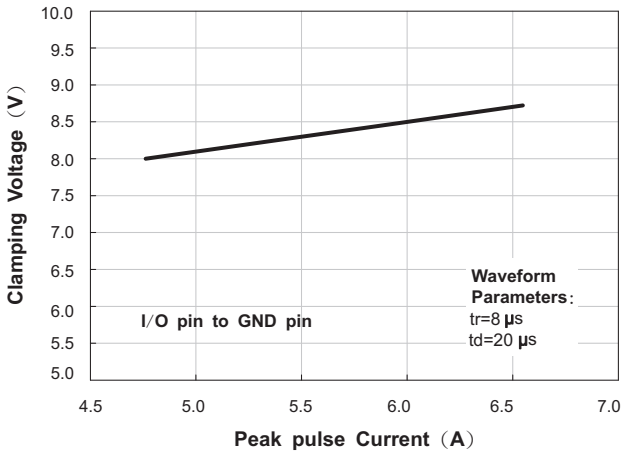


Fig.3 - Forward voltage v.s. forward current

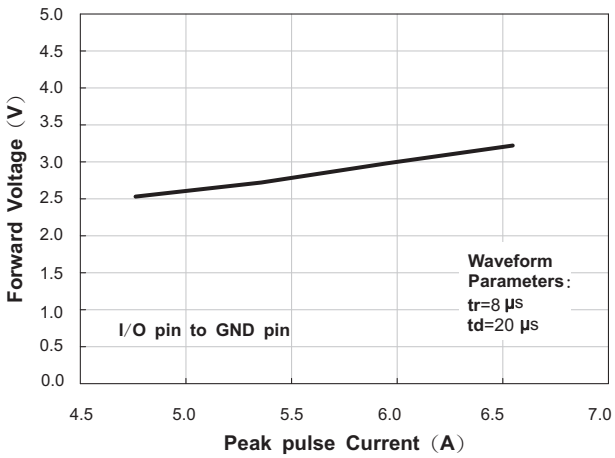


Fig.4 - Typical variation of CIN v.s. VIN

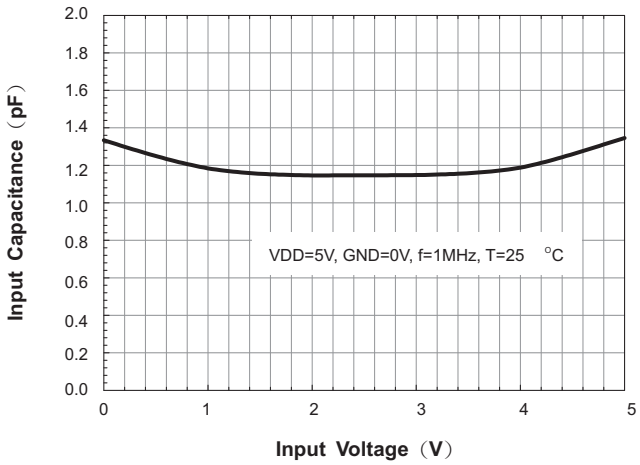


Fig. 5 - Typical variation of CIN v.s. temperature

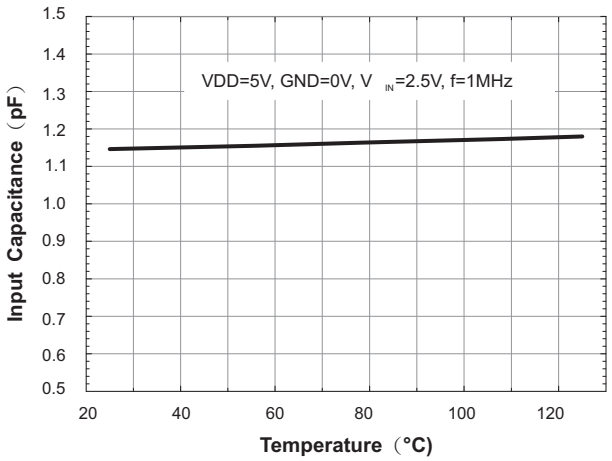
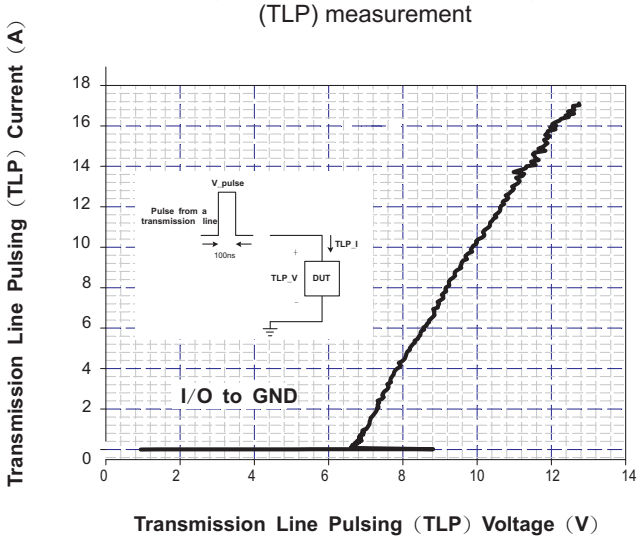
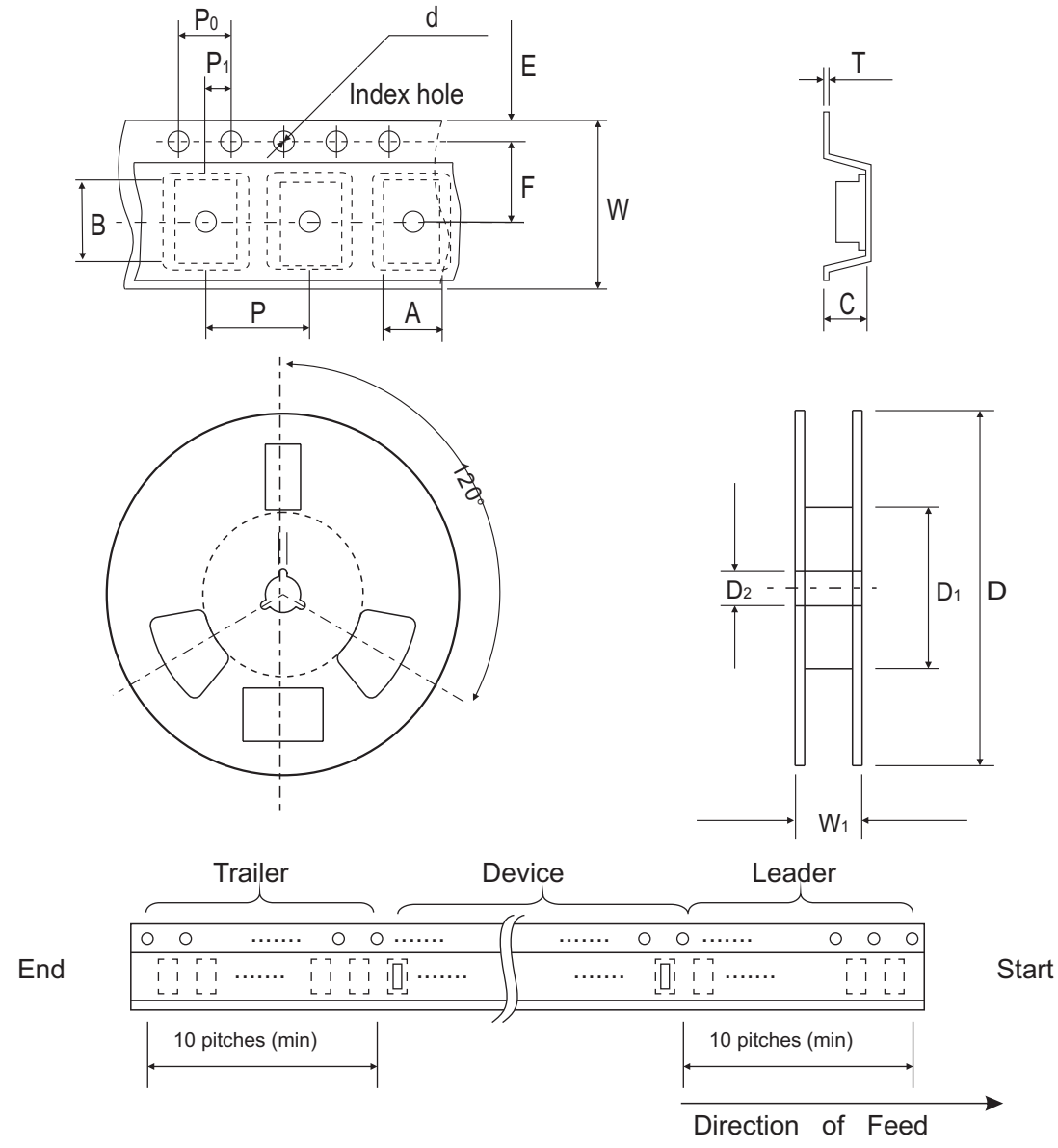


Fig. 6 - Transmission line pulsing (TLP) measurement



Reel Taping Specification

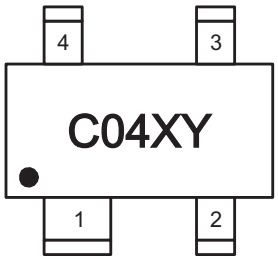


	SYMBOL	A	B	C	d	D	D_1	D_2
SOT-143	(mm)	3.19 ± 0.10	2.80 ± 0.10	1.31 ± 0.10	1.55 ± 0.10	178 ± 1	50.0 MIN.	13.0 ± 0.20
	(inch)	0.126 ± 0.004	0.110 ± 0.004	0.052 ± 0.004	0.061 ± 0.004	7.008 ± 0.040	1.969 MIN.	0.512 ± 0.008

	SYMBOL	E	F	P	P_0	P_1	W	W_1
SOT-143	(mm)	1.75 ± 0.10	3.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	8.00 ± 0.30	14.4 MAX.
	(inch)	0.069 ± 0.004	0.138 ± 0.002	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.315 ± 0.012	0.567 MAX

Marking Code

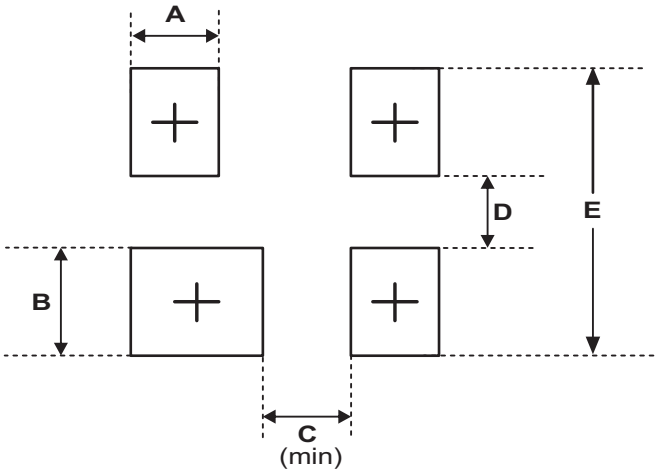
Part Number	Marking Code
CSRS045V0P	C04XY



C04 = Device code
X = Date Code
Y = Control Code

Suggested PAD Layout

SIZE	SOT-143	
	(mm)	(inch)
A	0.70	0.028
B	1.40	0.055
C	2.41	0.095
D	0.80	0.031
E	3.60	0.142



Standard Package

Case Type	Qty per Reel	Reel Size
	(Pcs)	(inch)
SOT-143	3000	7