

ESTABLISHMENT	2011.09.15	APPROVED	
REVISION	2016.05.03	Series NO:PDC50C110915006	

★ [APPROVAL SHEET]

TVS DIODE

CUSTOMER :

DATE :

You can reapprove only the changed quality request recorded in spec sheet.
And, We can decide other changed parts

PDC50C SERIES (SMC Package)

Working Voltage: 11 to 440 V

Peak Pulse Power: 5000 W

Features

- ◆ Glass passivated chip
- ◆ Low leakage
- ◆ Uni and Bidirectional unit
- ◆ Excellent clamping capability
- ◆ Very fast response time
- ◆ 5000 W peak pulse power capability with a 10/1000 μ s waveform, repetitive rate (duty cycle):0.01 %
- ◆ RoHS compliant

SMC



Mechanical Data

- ◆ SMC(DO-214AB) Package
- ◆ Epoxy: UL 94V-0 rate flame retardant
- ◆ Lead: Solderable per MIL-STD-750, method 2026
- ◆ Polarity: Color band denotes cathode end except Bipolar
- ◆ Mounting position: Any

Ordering Information

PDC	50C	110	K	B	-	SMC
(1)	(2)	(3)	(4)	(5)		(6)

(1) Product series:

PDC= TVS Diodes series

(2) Type:

50C

(3) Working Voltage:

110=11V,101=100V

(4) Tolerance:

J : $\pm 5\%$, K : $\pm 10\%$

(5) Direction:

B = Bidirectional Diode

U = Unidirectional Diode

(6) Package:

SMC

Maximum Rating & Characteristic

TA= 25°C Unless Otherwise Specified

Parameter	Symbol	Value	UNIT
Peak power dissipation with a 10/1000μs waveform ⁽¹⁾	P _{PP}	5000	W
Peak pulse current with a 10/1000μs waveform ⁽¹⁾	I _{PP}	See Next Table	A
Power dissipation on infinite heatsink at T _L = 75 °C	P _D	6.5	W
Peak forward surge current, 8.3 ms single half sine-wave unidirectional only ⁽²⁾	I _{FSM}	300	A
Maximum instantaneous forward voltage at 100 A for unidirectional only ⁽³⁾	V _F	3.5/5.0	V
Operating junction and storage temperature range	T _J , T _{STG}	–55 to +150	°C

Note:

(1)Non-repetitive current pulse per Fig.5 and derated above TA= 25 °C per Fig.1

(2)Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum

(3)V_F<3.5V for devices of VBR<200V and V_F<5.0V for devices of VBR>201V

Part Number	Marking Code		Breakdown Voltage VBR @ IT			Maximum Reverse Leakage IR @VRWM (uA)	Working Peak Reverse Voltage VRWM (V)	Maximum Reverse Surge Current IPP (A)	Maximum Clamping Voltage VC @IPP (V)
	Uni	Bi	Min (V)	Max (V)	IT (mA)				
PDC50C110K(B)-SMC	5PDW	5BDW	12.2	14.9	10	800	11	248.8	20.1
PDC50C110J(B)-SMC	5PDX	5BDX	12.2	13.5	10	800	11	274.7	18.2
PDC50C120K(B)-SMC	5PDY	5BDY	13.3	16.3	10	800	12	227.3	22
PDC50C120J(B)-SMC	5PDZ	5BDZ	13.3	14.7	10	800	12	251.3	19.9
PDC50C130K(B)-SMC	5PED	5BED	14.4	17.6	10	500	13	210.1	23.8
PDC50C130J(B)-SMC	5PEE	5BEE	14.4	15.9	10	500	13	232.6	21.5
PDC50C140K(B)-SMC	5PEF	5BEF	15.6	19.1	10	200	14	193.8	25.8
PDC50C140J(B)-SMC	5PEG	5BEG	15.6	17.2	10	200	14	215.5	23.2
PDC50C150K(B)-SMC	5PEH	5BEH	16.7	20.4	1	100	15	185.9	26.9
PDC50C150J(B)-SMC	5PEK	5BEK	16.7	18.5	1	100	15	204.9	24.4
PDC50C160K(B)-SMC	5PEL	5BEL	17.8	21.8	1	50	16	173.6	28.8
PDC50C160J(B)-SMC	5PEM	5BEM	17.8	19.7	1	50	16	192.3	26
PDC50C170K(B)-SMC	5PEN	5BEN	18.9	23.1	1	20	17	163.9	30.5
PDC50C170J(B)-SMC	5PEP	5BEP	18.9	20.9	1	20	17	181.2	27.6
PDC50C180K(B)-SMC	5PEQ	5BEQ	20	24.4	1	10	18	155.3	32.2
PDC50C180J(B)-SMC	5PER	5BER	20	22.1	1	10	18	171.2	29.2
PDC50C190K(B)-SMC	5PES	5BES	21.13	25.76	1	10	19	147	34
PDC50C190J(B)-SMC	5PET	5BET	21.1	23.3	1	10	19	162.4	30.8
PDC50C200K(B)-SMC	5PEU	5BEU	22.2	27.1	1	5	20	139.7	35.8
PDC50C200J(B)-SMC	5PEV	5BEV	22.2	24.5	1	5	20	154.3	32.4
PDC50C220K(B)-SMC	5PEW	5BEW	24.4	29.8	1	5	22	126.9	39.4
PDC50C220J(B)-SMC	5PEX	5BEX	24.4	26.9	1	5	22	140.8	35.5
PDC50C240K(B)-SMC	5PEY	5BEY	26.7	32.6	1	5	24	116.3	43
PDC50C240J(B)-SMC	5PEZ	5BEZ	26.7	29.5	1	5	24	128.5	38.9
PDC50C260K(B)-SMC	5PFD	5BFD	28.9	35.3	1	5	26	107.3	46.6
PDC50C260J(B)-SMC	5PFE	5BFE	28.9	31.9	1	5	26	118.8	42.1
PDC50C280K(B)-SMC	5PFF	5BFF	31.1	38	1	5	28	100	50
PDC50C280J(B)-SMC	5PFG	5BFG	31.1	34.4	1	5	28	110.1	45.4
PDC50C300K(B)-SMC	5PFH	5BFH	33.3	40.7	1	5	30	93.5	53.5
PDC50C300J(B)-SMC	5PFK	5BFK	33.3	36.8	1	5	30	103.3	48.4
PDC50C330K(B)-SMC	5PFL	5BFL	36.7	44.9	1	5	33	84.7	59
PDC50C330J(B)-SMC	5PFM	5BFM	36.7	40.6	1	5	33	93.8	53.3
PDC50C360K(B)-SMC	5PFN	5BFN	40	48.9	1	5	36	77.8	64.3
PDC50C360J(B)-SMC	5PFP	5BFP	40	44.2	1	5	36	86.1	58.1
PDC50C400K(B)-SMC	5PFQ	5BFQ	44.4	54.3	1	5	40	70	71.4
PDC50C400J(B)-SMC	5PFR	5BFR	44.4	49.1	1	5	40	77.5	64.5

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	Uni	Bi	Min (V)	Max (V)	IT (mA)				
PDC50C430K(B)-SMC	5PFS	5BFS	47.8	58.4	1	5	43	65.2	76.7
PDC50C430J(B)-SMC	5PFT	5BFT	47.8	52.8	1	5	43	72	69.4
PDC50C450K(B)-SMC	5PFU	5BFU	50	61.1	1	5	45	62.3	80.3
PDC50C450J(B)-SMC	5PFV	5BFV	50	55.3	1	5	45	68.8	72.7
PDC50C480K(B)-SMC	5PFW	5BFW	53.3	65.1	1	5	48	58.5	85.5
PDC50C480J(B)-SMC	5PFX	5BFX	53.3	58.9	1	5	48	64.6	77.4
PDC50C510K(B)-SMC	5PFY	5BFY	56.7	69.3	1	5	51	54.9	91.1
PDC50C510J(B)-SMC	5PFZ	5BFZ	56.7	62.7	1	5	51	60.7	82.4
PDC50C540K(B)-SMC	5PGD	5BGD	60	73.3	1	5	54	51.9	96.3
PDC50C540J(B)-SMC	5PGE	5BGE	60	66.3	1	5	54	57.4	87.1
PDC50C580K(B)-SMC	5PGF	5BGF	64.4	78.7	1	5	58	48.5	103
PDC50C580J(B)-SMC	5PGG	5BGG	64.4	71.2	1	5	58	53.4	93.6
PDC50C600K(B)-SMC	5PGH	5BGH	66.7	81.5	1	5	60	46.7	107
PDC50C600J(B)-SMC	5PGK	5BGK	66.7	73.7	1	5	60	51.7	96.8
PDC50C640K(B)-SMC	5PGL	5BGL	71.1	86.9	1	5	64	43.9	114
PDC50C640J(B)-SMC	5PGM	5BGM	71.1	78.6	1	5	64	48.5	103
PDC50C700K(B)-SMC	5PGN	5BGN	77.8	95.1	1	5	70	40	125
PDC50C700J(B)-SMC	5PGP	5BGP	77.8	86	1	5	70	44.2	113
PDC50C750K(B)-SMC	5PGQ	5BGQ	83.3	102	1	5	75	37.3	134
PDC50C750J(B)-SMC	5PGR	5BGR	83.3	92.1	1	5	75	41.3	121
PDC50C780K(B)-SMC	5PGS	5BGS	86.7	106	1	5	78	36	139
PDC50C780J(B)-SMC	5PGT	5BGT	86.7	95.8	1	5	78	39.7	126
PDC50C800K(B)-SMC	5PGA	5BGA	88.96	108.8	1	5	80	34.9	143.2
PDC50C800J(B)-SMC	5PGB	5BGB	88.8	97.6	1	5	80	38.6	129.6
PDC50C850K(B)-SMC	5PGU	5BGU	94.4	115	1	5	85	33.1	151
PDC50C850J(B)-SMC	5PGV	5BGV	94.4	104	1	5	85	36.5	137
PDC50C900K(B)-SMC	5PGW	5BGW	100	122	1	5	90	31.3	160
PDC50C900J(B)-SMC	5PGX	5BGX	100	111	1	5	90	34.2	146
PDC50C101K(B)-SMC	5PGY	5BGY	111	136	1	5	100	27.9	179
PDC50C101J(B)-SMC	5PGZ	5BGZ	111	123	1	5	100	30.9	162
PDC50C111K(B)-SMC	5PHD	5BHD	122	149	1	5	110	25.5	196
PDC50C111J(B)-SMC	5PHE	5BHE	122	135	1	5	110	28.2	177
PDC50C121K(B)-SMC	5PHF	5BHF	133	163	1	5	120	23.4	214
PDC50C121J(B)-SMC	5PHG	5BHG	133	147	1	5	120	25.9	193
PDC50C131K(B)-SMC	5PHH	5BHH	144	176	1	5	130	21.6	231
PDC50C131J(B)-SMC	5PHK	5BHK	144	159	1	5	130	23.9	209

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	Uni	Bi	Min (V)	Max (V)	IT (mA)				
PDC50C141K(B)-SMC	5PHA	5BHA	155.7	190.4	1	5	140	20	250.6
PDC50C141J(B)-SMC	5PHB	5BHB	155	171	1	5	140	22	226.8
PDC50C151K(B)-SMC	5PHL	5BHL	167	204	1	5	150	18.7	268
PDC50C151J(B)-SMC	5PHM	5BHM	167	185	1	5	150	20.6	243
PDC50C161K(B)-SMC	5PHN	5BHN	178	218	1	5	160	17.4	287
PDC50C161J(B)-SMC	5PHP	5BHP	178	197	1	5	160	19.3	259
PDC50C171K(B)-SMC	5PHQ	5BHQ	189	231	1	5	170	16.4	304
PDC50C171J(B)-SMC	5PHR	5BHR	189	209	1	5	170	18.2	275
PDC50C181K(B)-SMC	5PHS	5BHS	200.2	244.8	1	5	180	15.5	322.2
PDC50C181J(B)-SMC	5PHT	5BHT	200	220	1	5	180	17.1	291.6
PDC50C191K(B)-SMC	5PHU	5BHU	211.3	258.4	1	5	190	14.7	340.1
PDC50C191J(B)-SMC	5PHV	5BHV	211	232	1	5	190	16.2	307.8
PDC50C201J(B)-SMC	5PHW	5BHW	224	247	1	5	200	15.4	324
PDC50C221J(B)-SMC	5PHX	5BHX	246	272	1	5	220	14	356
PDC50C251J(B)-SMC	5PHZ	5BHZ	279	309	1	5	250	12.3	405
PDC50C301J(B)-SMC	5PJE	5BJE	335	371	1	5	300	10.3	486
PDC50C351J(B)-SMC	5PJG	5BJG	391	432	1	5	350	8.8	567
PDC50C401J(B)-SMC	5PJK	5BJK	447	494	1	5	400	7.7	648
PDC50C441J(B)-SMC	5PJM	5BJM	492	543	1	5	440	7	713

Notes:

- 1) Suffix K denotes 10% tolerance, suffix J denote 5% tolerance devices.
- 2) Suffix B after part number to specify Bi-directional devices; U for uni-directional.
- 3) For Bi-directional devices having VR of 10 volts and under, the IR limit is double.

Characteristic Curve

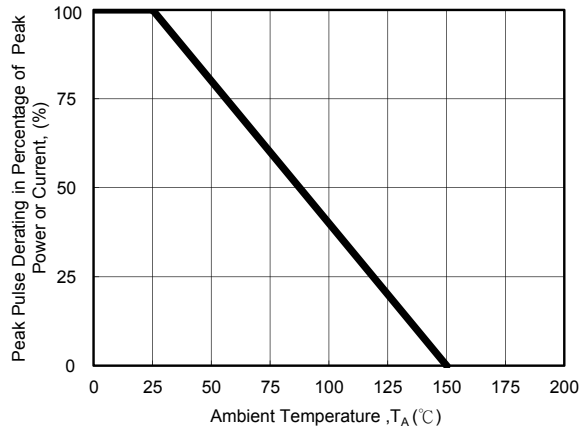


Fig. 1 - Pulse Derating Curve

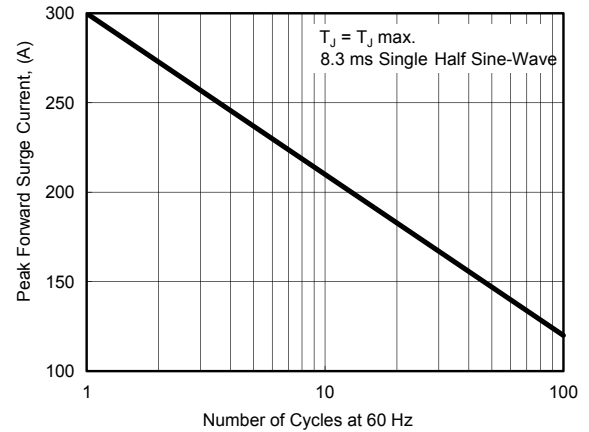


Fig. 2 - Maximum Non-Repetitive Surge Current

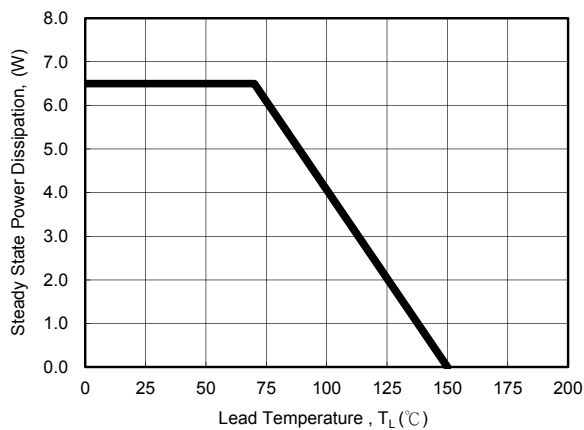


Fig. 3 - Steady State Power Derating Curve

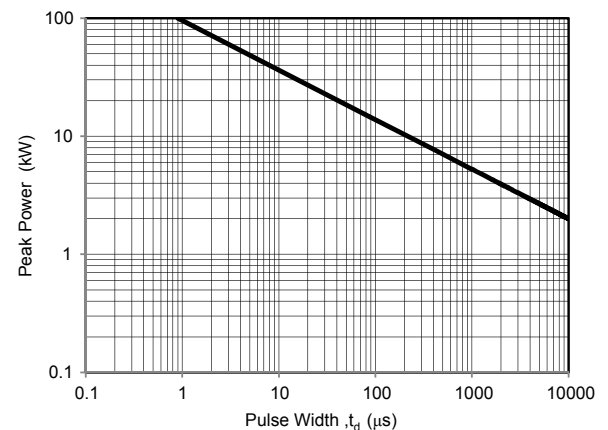


Fig. 4 - Peak Pulse Power Rating Curve

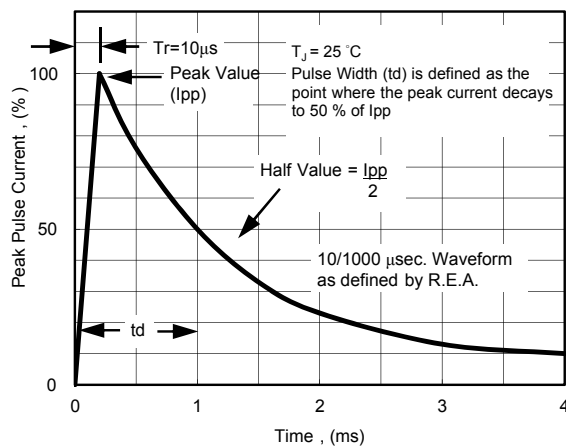


Fig. 5 - Pulse Waveform

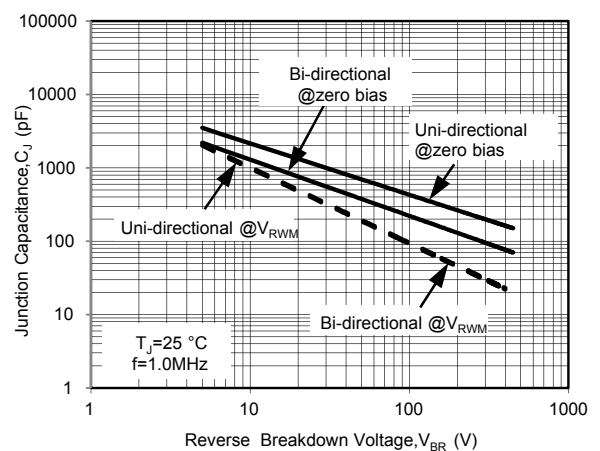
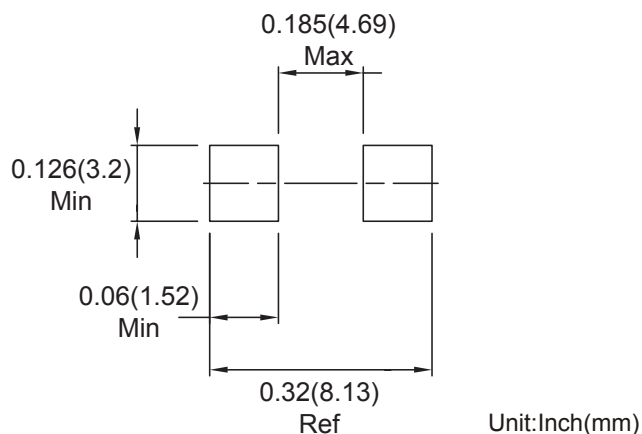
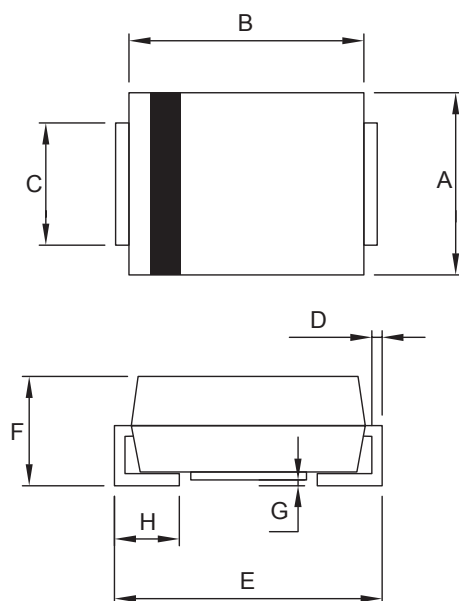


Fig. 6 - Typical Junction Capacitance

Recommended PAD Layout



Package Outline & Dimension



Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	5.55	6.04	0.219	0.238
B	6.6	7.15	0.26	0.281
C	2.9	3.2	0.114	0.126
D	0.15	0.3	0.006	0.012
E	7.75	7.95	0.305	0.313
F	1.98	2.53	0.078	0.100
G	0	0.2	0	0.008
H	0.75	1.51	0.030	0.059

Standard Packaging

P/N	Qty per Reel	Reel Size
PDC50C SERIES	3000	13 inch