

SPECIFICATION SHEET NO.	S0403- SMBJ190CALS0EV	
ORIGINAL MFG/PART NO.	LGE Diodes/SMBJ190CA-L	
NEXTGEN PART CODE	SMBJ190CALS0EV	Indicate This Code For RFQ /Order
DATE	Apr. 3, 2025	
REVISION	A3	Updated With Most Recent Data
DESCRIPTION AND MAIN PARAMETRICS	SMD Transient Voltage Suppressor (TVs) Diodes, SMBJ Series Case SMB/DO-214AA, 2 Pads, Bidirectional Type, Stand-off Voltage 190V, Peak Pulse Power: 600 Watts, Reverse Surge Current: 1.95A Max. Operating Junction Temp. Range -55°C ~+150°C Package in Tape/Reel, 3000pcs/Reel RoHS/RoHS III compliant, RoHS Annex III lead Exemption (Exempt per RoHS EU 2015/863) and Halogen Free (HF)	
CUSTOMER		
CUSTOMER PART NUMBER		
CROSS REF. PART NUMBER		
MEMO		

VENDOR APPROVE

Issued/Checked/Approved



Effective Date: Apr. 3, 2025

CUSTOMER APPROVE

Date:

MAIN FEATURE

- Glass Passivated Chip
- 600W Peak Pulse Power Capability With a 10/1000 μ s Waveform, Repetitive Rate (Duty Cycle):0.01 %
- Uni-Directional and Bi-directional Polarity Option
- Low Leakage
- 5% VBR Voltage Tolerance
- Excellent Clamping Capability
- Very Fast Response Time
- Short Lead Time
- Cross Competitors Parts and More.
- RoHS/RoHS III compliant, RoHS Annex III lead Exemption (Exempt per RoHS EU 2015/863) and Halogen Free (HF)



Image shown is a representation only.

*Exact specifications should be obtained
from the product dimension.*



APPLICATION

- I/O Interface
- AC/DC Power Supply
- Low Frequency Signal Transmission Line (RS232, RS485, etc.)

ELECTRICAL CHARACTERISTICS

- See Page 5 ~Page 17 For Different Part Code
- All Parameters are Subject To NextGen Components' Final Confirmation

HOW TO ORDER

- Please Follow Up Part Code Guide And Indicate NextGen Part Code SMBJ190CALS0EV For RFQ and Order.

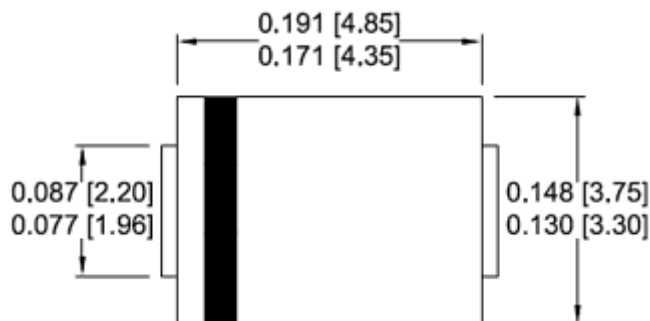
PART CODE GUIDE

RFQ
[Request For Quotation](#)

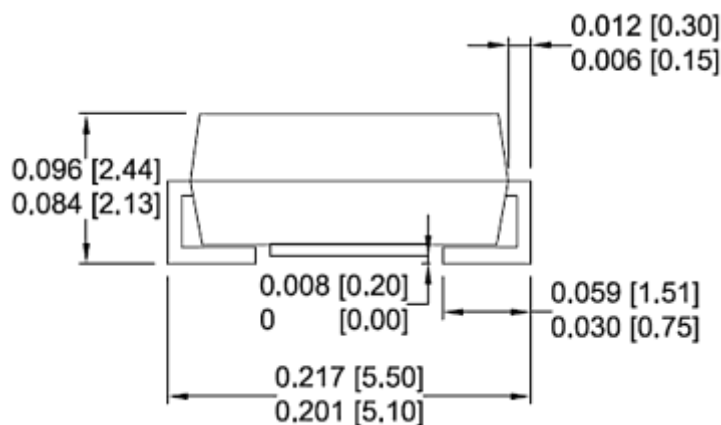
CODE	NAME	KEY SPECIFICATION OPTION
SMBJ	Product Series Code	SMD Transient Voltage Suppressors (TVs) Diodes, Case SMB/DO-214AA, 2 Pads
190CA	Mode code	190CA: Working Peak Reverse Voltage 190V, Bidirectional Polarity Type Reverse Surge Current: 1.95A Max.
LS0	Internal Control Code	Letter or Digits (A~Z, a~z or 1~9)
EV	Marking Code	Marking “EV”
XX	Special/Custom Parameters Code	Letter or Digits (A~Z, a~z or 1~9) for Special Parametric; Blank: N/A

DIMENSION- Unit: Inch [mm], Case SMB/DO-214AA Outline

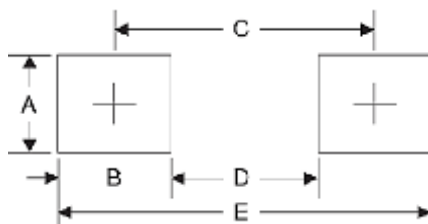
Top View



Side View



Recommend Pad Layout



SYMBOL	A	B	C	D	E
Unit (Inch)	0.11	0.094	0.181	0.086	0.276
Unit (mm)	2.80	2.40	4.60	2.20	7.00

MECHANICAL DATA

CASE	EXPOXY	LEAD	POLARITY	MOUNTING POSITION	MARKING
JEDEC SMB/DO-214AA Molded Plastic Body	UL 94V-0 Rate Flame Retardant	Solderable per MIL-STD 750, Method 2026	Color Band Denotes Cathode End Except Bipolar	Any	See Marking Code List

MAX. RATING & CHARACTERISTICS - Ratings at 25°C ambient temperature unless otherwise specified.

PARAMETER	SYMBOLS	VALUE	UNITS
Peak Power Dissipation with 10/1000μs Waveform See Note 1	P _{pp}	600	W
Peak Pulse Current with a 10/1000μs waveform See Note 1	I _{pp}	See Page 6~ Page 17	A
Power Dissipation On Infinite Heatsink at T _L = 75 °C	P _D	5.0	W
Peak Forward Surge Current 8.3ms Single Half Sine- Wave Unidirectional Type Only	I _{FSM}	100	A
Maximum instantaneous forward voltage at 50A for Unidirectional Type Only	V _F	3.5/5.0	V
Operating Junction And Storage Temperature Range	T _J , T _{STG}	-55 ~ +150	°C

Note

1. Non-repetitive Current Pulse Per Fig.5 And Derated Above T_A= 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 Max.
3. V_F<3.5V for devices of V_{BR}<200V and V_F<5.0V for devices of V_{BR}>201V

UNIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C

Part Code	Working Peak Reverse Voltage	Breakdown Voltage		Test Current	Max. Reverse Leakage	Max. Reverse Surge Current	Max. Clamping Voltage	Marking Code
		VBR @ IT						
	VRWM	Min.	Max.	IT	IR @ VRWM	IPP	VC @ IPP	
	V	V	V	mA	µA	A	V	
SMBJ033AL0S0KC	3.3	4.1	4.6	10	100	82.5	7.3	KC
SMBJ050L00S0KD	5	6.4	7.3	10	800	62.5	9.6	KD
SMBJ050AL0S0KE	5	6.4	7	10	800	65.22	9.2	KE
SMBJ060L00S0KF	6	6.67	8.15	10	800	52.63	11.4	KF
SMBJ060AL0S0KG	6	6.67	7.37	10	800	58.25	10.3	KG
SMBJ065L00S0KH	6.5	7.22	8.82	10	500	48.78	12.3	KH
SMBJ065AL0S0KK	6.5	7.22	7.98	10	500	53.57	11.2	KK
SMBJ070L00S0KL	7	7.78	9.51	10	200	45.11	13.3	KL
SMBJ070AL0S0KM	7	7.78	8.6	10	200	50	12	KM
SMBJ075L00S0KN	7.5	8.33	10.2	1	100	41.96	14.3	KN
SMBJ075AL0S0KP	7.5	8.33	9.21	1	100	46.51	12.9	KP
SMBJ080L00S0KQ	8	8.89	10.9	1	50	40	15	KQ
SMBJ080AL0S0KR	8	8.89	9.83	1	50	44.12	13.6	KR
SMBJ085L00S0KS	8.5	9.44	11.5	1	10	37.74	15.9	KS
SMBJ085AL0S0KT	8.5	9.44	10.4	1	10	41.67	14.4	KT
SMBJ090L00S0KU	9	10	12.2	1	5	35.5	16.9	KU
SMBJ090AL0S0KV	9	10	11.1	1	5	38.96	15.4	KV
SMBJ10L000S0KW	10	11.1	13.6	1	5	31.91	18.8	KW
SMBJ10AL00S0KX	10	11.1	12.3	1	5	35.29	17	KX
SMBJ11L000S0KY	11	12.2	14.9	1	1	29.85	20.1	KY

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		VBR @ IT						
	VRWM	Min.	Max.	IT	IR @ VRWM	IPP	VC @ IPP	
	V	V	V	mA	µA	A	V	
SMBJ11AL00S0KZ	11	12.2	13.5	1	1	32.97	18.2	KZ
SMBJ12L000SOLD	12	13.3	16.3	1	1	27.27	22	LD
SMBJ12AL00SOLE	12	13.3	14.7	1	1	30.15	19.9	LE
SMBJ13L000SOLF	13	14.4	17.6	1	1	25.21	23.8	LF
SMBJ13AL00SOLG	13	14.4	15.9	1	1	27.91	21.5	LG
SMBJ14L000SOLH	14	15.6	19.1	1	1	23.26	25.8	LH
SMBJ14AL00SOLK	14	15.6	17.2	1	1	25.86	23.2	LK
SMBJ15L000SOLL	15	16.7	20.4	1	1	22.3	26.9	LL
SMBJ15AL00SOLM	15	16.7	18.5	1	1	24.59	24.4	LM
SMBJ16L000SOLN	16	17.8	21.8	1	1	20.83	28.8	LN
SMBJ16AL00SOLP	16	17.8	19.7	1	1	23.08	26	LP
SMBJ17L000SOLQ	17	18.9	23.1	1	1	19.67	30.5	LQ
SMBJ17AL00SOLR	17	18.9	20.9	1	1	21.74	27.6	LR
SMBJ18L000SOLS	18	20	24.4	1	1	18.63	32.2	LS
SMBJ18AL00SOLT	18	20	22.1	1	1	20.55	29.2	LT
SMBJ19L000SOLA	19	21.13	25.76	1	1	17.64	34.0	LA
SMBJ19AL00SOLB	19	21.1	23.3	1	1	19.49	30.8	LB
SMBJ20L000SOLU	20	22.2	27.1	1	1	16.76	35.8	LU
SMBJ20AL00SOLV	20	22.2	24.5	1	1	18.52	32.4	LV
SMBJ22L000SOLW	22	24.4	29.8	1	1	15.23	39.4	LW

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		VBR @ IT						
	VRWM	Min.	Max.	IT	IR @ VRWM	IPP	VC @ IPP	
	V	V	V	mA	µA	A	V	
SMBJ22AL00SOLX	22	24.4	26.9	1	1	16.9	35.5	LX
SMBJ24L000SOLY	24	26.7	32.6	1	1	13.95	43	LY
SMBJ24AL00SOLZ	24	26.7	29.5	1	1	15.42	38.9	LZ
SMBJ26L000S0MD	26	28.9	35.3	1	1	12.88	46.6	MD
SMBJ26AL00S0ME	26	28.9	31.9	1	1	14.25	42.1	ME
SMBJ28L000S0MF	28	31.1	38	1	1	12	50	MF
SMBJ28AL00S0MG	28	31.1	34.4	1	1	13.22	45.4	MG
SMBJ30L000S0MH	30	33.3	40.7	1	1	11.21	53.5	MH
SMBJ30AL00S0MK	30	33.3	36.8	1	1	12.4	48.4	MK
SMBJ33L000S0ML	33	36.7	44.9	1	1	10.17	59	ML
SMBJ33AL00S0MM	33	36.7	40.6	1	1	11.26	53.3	MM
SMBJ36L000S0MN	36	40	48.9	1	1	9.33	64.3	MN
SMBJ36AL00S0MP	36	40	44.2	1	1	10.33	58.1	MP
SMBJ40L000S0MQ	40	44.4	54.3	1	1	8.4	71.4	MQ
SMBJ40AL00S0MR	40	44.4	49.1	1	1	9.3	64.5	MR
SMBJ43L000S0MS	43	47.8	58.4	1	1	7.82	76.7	MS
SMBJ43AL00S0MT	43	47.8	52.8	1	1	8.65	69.4	MT
SMBJ45L000S0MU	45	50	61.1	1	1	7.47	80.3	MU
SMBJ45AL00S0MV	45	50	55.3	1	1	8.25	72.7	MV
SMBJ48L000S0MW	48	53.3	65.1	1	1	7.02	85.5	MW

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		VBR @ IT						
	VRWM	Min.	Max.	IT	IR @ VRWM	IPP	VC @ IPP	
	V	V	V	mA	µA	A	V	
SMBJ48AL00S0MX	48	53.3	58.9	1	1	7.75	77.4	MX
SMBJ51L000S0MY	51	56.7	69.3	1	1	6.59	91.1	MY
SMBJ51AL00S0MZ	51	56.7	62.7	1	1	7.28	82.4	MZ
SMBJ54L000S0ND	54	60	73.3	1	1	6.23	96.3	ND
SMBJ54AL00S0NE	54	60	66.3	1	1	6.89	87.1	NE
SMBJ58L000S0NF	58	64.4	78.7	1	1	5.83	103	NF
SMBJ58AL00S0NG	58	64.4	71.2	1	1	6.41	93.6	NG
SMBJ60L000S0NH	60	66.7	81.5	1	1	5.61	107	NH
SMBJ60AL00S0NK	60	66.7	73.7	1	1	6.2	96.8	NK
SMBJ64L000S0NL	64	71.1	86.9	1	1	5.26	114	NL
SMBJ64AL00S0NM	64	71.1	78.6	1	1	5.83	103	NM
SMBJ70L000S0NN	70	77.8	95.1	1	1	4.8	125	NN
SMBJ70AL00S0NP	70	77.8	86	1	1	5.31	113	NP
SMBJ75L000S0NQ	75	83.3	102	1	1	4.48	134	NQ
SMBJ75AL00S0NR	75	83.3	92.1	1	1	4.96	121	NR
SMBJ78L000S0NS	78	86.7	106	1	1	4.32	139	NS
SMBJ78AL00S0NT	78	86.7	95.8	1	1	4.76	126	NT
SMBJ80L000S0NA	80	88.96	108.8	1	1	4.19	143.2	NA
SMBJ80AL00S0NB	80	88.8	97.6	1	1	4.63	129.6	NB
SMBJ85L000S0NU	85	94.4	115	1	1	3.97	151	NU

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		VBR @ IT						
	VRWM	Min.	Max.	IT	IR @ VRWM	IPP	VC @ IPP	
	V	V	V	mA	µA	A	V	
SMBJ85AL00SONV	85	94.4	104	1	1	4.38	137	NV
SMBJ90L000SONW	90	100	122	1	1	3.75	160	NW
SMBJ90AL00SONX	90	100	111	1	1	4.11	146	NX
SMBJ100L00SONY	100	111	136	1	1	3.35	179	NY
SMBJ100AL0SONZ	100	111	123	1	1	3.7	162	NZ
SMBJ110L00SOPD	110	122	149	1	1	3.06	196	PD
SMBJ110AL0SOPe	110	122	135	1	1	3.39	177	Pe
SMBJ120L00SOPF	120	133	163	1	1	2.8	214	PF
SMBJ120AL0SOPG	120	133	147	1	1	3.11	193	PG
SMBJ130L00SOPH	130	144	176	1	1	2.6	231	PH
SMBJ130AL0SOPK	130	144	159	1	1	2.87	209	PK
SMBJ140L00SOPA	140	155.68	190.4	1	1	2.39	250.6	PA
SMBJ140AL0SOPB	140	155	171	1	1	2.65	226.8	PB
SMBJ150L00SOPL	150	167	204	1	1	2.24	268	PL
SMBJ150AL0SOPM	150	167	185	1	1	2.47	243	PM
SMBJ160L00SOPN	160	178	218	1	1	2.09	287	PN
SMBJ160AL0SOPP	160	178	197	1	1	2.32	259	PP
SMBJ170L00SOPQ	170	189	231	1	1	1.97	304	PQ
SMBJ170AL0SOPR	170	189	209	1	1	2.18	275	PR
SMBJ180L00SOPS	180	200.16	244.8	1	1	1.86	322.2	PS

[illegible]

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		VBR @ IT						
	VRWM	Min.	Max.	IT	IR @ VRWM	IPP	Vc @ IPP	
	V	V	V	mA	µA	A	V	
SMBJ033CALSOAC	3.3	4.1	4.6	10	100	82.5	7.3	AC
SMBJ050CLOSOAD	5	6.4	7.3	10	800	62.5	9.6	AD
SMBJ050CALSOAE	5	6.4	7	10	800	65.22	9.2	AE
SMBJ060CLOSOAF	6	6.67	8.15	10	800	52.63	11.4	AF
SMBJ060CALSOAG	6	6.67	7.37	10	800	58.25	10.3	AG
SMBJ065CLOSOAH	6.5	7.22	8.82	10	500	48.78	12.3	AH
SMBJ065CALSOAK	6.5	7.22	7.98	10	500	53.57	11.2	AK
SMBJ070CLOSOAL	7	7.78	9.51	10	200	45.11	13.3	AL
SMBJ070CALSOAM	7	7.78	8.6	10	200	50	12	AM
SMBJ075CLOSOAN	7.5	8.33	10.2	1	100	41.96	14.3	AN
SMBJ075CALSOAP	7.5	8.33	9.21	1	100	46.51	12.9	AP
SMBJ080CLOSOAQ	8	8.89	10.9	1	50	40	15	AQ
SMBJ080CALSOAR	8	8.89	9.83	1	50	44.12	13.6	AR
SMBJ085CLOSOAS	8.5	9.44	11.5	1	10	37.74	15.9	AS
SMBJ085CALSOAT	8.5	9.44	10.4	1	10	41.67	14.4	AT
SMBJ090CLOSOAU	9	10	12.2	1	5	35.5	16.9	AU
SMBJ090CALSOAV	9	10	11.1	1	5	38.96	15.4	AV
SMBJ10CLO0SOAW	10	11.1	13.6	1	5	31.91	18.8	AW
SMBJ10CAL0SOAX	10	11.1	12.3	1	5	35.29	17	AX
SMBJ11CLO0SOAY	11	12.2	14.9	1	1	29.85	20.1	AY

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		VBR @ IT						
	VRWM	Min.	Max.	IT	IR @ VRWM	IPP	VC @ IPP	
	V	V	V	mA	µA	A	V	
SMBJ11CAL0S0AZ	11	12.2	13.5	1	1	32.97	18.2	AZ
SMBJ12CL00S0BD	12	13.3	16.3	1	1	27.27	22	BD
SMBJ12CAL0S0BE	12	13.3	14.7	1	1	30.15	19.9	BE
SMBJ13CL00S0BF	13	14.4	17.6	1	1	25.21	23.8	BF
SMBJ13CAL0S0BG	13	14.4	15.9	1	1	27.91	21.5	BG
SMBJ14CL00S0BH	14	15.6	19.1	1	1	23.26	25.8	BH
SMBJ14CAL0S0BK	14	15.6	17.2	1	1	25.86	23.2	BK
SMBJ15CL00S0BL	15	16.7	20.4	1	1	22.3	26.9	BL
SMBJ15CAL0S0BM	15	16.7	18.5	1	1	24.59	24.4	BM
SMBJ16CL00S0BN	16	17.8	21.8	1	1	20.83	28.8	BN
SMBJ16CAL0S0BP	16	17.8	19.7	1	1	23.08	26	BP
SMBJ17CL00S0BQ	17	18.9	23.1	1	1	19.67	30.5	BQ
SMBJ17CAL0S0BR	17	18.9	20.9	1	1	21.74	27.6	BR
SMBJ18CL00S0BS	18	20	24.4	1	1	18.63	32.2	BS
SMBJ18CAL0S0BT	18	20	22.1	1	1	20.55	29.2	BT
SMBJ19CL00S0BA	19	21.13	25.76	1	1	17.64	34	BA
SMBJ19CAL0S0BB	19	21.1	23.30	1	1	19.49	30.8	BB
SMBJ20CL00S0BU	20	22.2	27.1	1	1	16.76	35.8	BU
SMBJ20CAL0S0BV	20	22.2	24.5	1	1	18.52	32.4	BV
SMBJ22CL00S0BW	22	24.4	29.8	1	1	15.23	39.4	BW

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		VBR @ IT						
	VRWM	Min.	Max.	IT	IR @ VRWM	IPP	VC @ IPP	
	V	V	V	mA	µA	A	V	
SMBJ22CAL0S0BX	22	24.4	26.9	1	1	16.9	35.5	BX
SMBJ24CL00S0BY	24	26.7	32.6	1	1	13.95	43	BY
SMBJ24CAL0S0BZ	24	26.7	29.5	1	1	15.42	38.9	BZ
SMBJ26CL00S0CD	26	28.9	35.3	1	1	12.88	46.6	CD
SMBJ26CAL0S0CE	26	28.9	31.9	1	1	14.25	42.1	CE
SMBJ28CL00S0CF	28	31.1	38	1	1	12	50	CF
SMBJ28CAL0S0CG	28	31.1	34.4	1	1	13.22	45.4	CG
SMBJ30CL00S0CH	30	33.3	40.7	1	1	11.21	53.5	CH
SMBJ30CAL0S0CK	30	33.3	36.8	1	1	12.4	48.4	CK
SMBJ33CL00S0CL	33	36.7	44.9	1	1	10.17	59	CL
SMBJ33CAL0S0CM	33	36.7	40.6	1	1	11.26	53.3	CM
SMBJ36CL00S0CN	36	40	48.9	1	1	9.33	64.3	CN
SMBJ36CAL0S0CP	36	40	44.2	1	1	10.33	58.1	CP
SMBJ40CL00S0CQ	40	44.4	54.3	1	1	8.4	71.4	CQ
SMBJ40CAL0S0CR	40	44.4	49.1	1	1	9.3	64.5	CR
SMBJ43CL00S0CS	43	47.8	58.4	1	1	7.82	76.7	CS
SMBJ43CAL0S0CT	43	47.8	52.8	1	1	8.65	69.4	CT
SMBJ45CL00S0CU	45	50	61.1	1	1	7.47	80.3	CU
SMBJ45CAL0S0CV	45	50	55.3	1	1	8.25	72.7	CV
SMBJ48CL00S0CW	48	53.3	65.1	1	1	7.02	85.5	CW

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		VBR @ IT						
	VRWM	Min.	Max.	IT	IR @ VRWM	IPP	Vc @ IPP	
	V	V	V	mA	μA	A	V	
SMBJ48CAL0S0CX	48	53.3	58.9	1	1	7.75	77.4	CX
SMBJ51CL00S0CY	51	56.7	69.3	1	1	6.59	91.1	CY
SMBJ51CAL0S0CZ	51	56.7	62.7	1	1	7.28	82.4	CZ
SMBJ54CL00S0DD	54	60	73.3	1	1	6.23	96.3	DD
SMBJ54CAL0S0DE	54	60	66.3	1	1	6.89	87.1	DE
SMBJ58CL00S0DF	58	64.4	78.7	1	1	5.83	103	DF
SMBJ58CAL0S0DG	58	64.4	71.2	1	1	6.41	93.6	DG
SMBJ60CL00S0DH	60	66.7	81.5	1	1	5.61	107	DH
SMBJ60CAL0S0DK	60	66.7	73.7	1	1	6.2	96.8	DK
SMBJ64CL00S0DL	64	71.1	86.9	1	1	5.26	114	DL
SMBJ64CAL0S0DM	64	71.1	78.6	1	1	5.83	103	DM
SMBJ70CL00S0DN	70	77.8	95.1	1	1	4.8	125	DN
SMBJ70CAL0S0DP	70	77.8	86	1	1	5.31	113	DP
SMBJ75CL00S0DQ	75	83.3	102	1	1	4.48	134	DQ
SMBJ75CAL0S0DR	75	83.3	92.1	1	1	4.96	121	DR
SMBJ78CL00S0DS	78	86.7	106	1	1	4.32	139	DS
SMBJ78CAL0S0DT	78	86.7	95.8	1	1	4.76	126	DT
SMBJ80CL00S0DA	80	88.96	108.80	1	1	4.19	143.2	DA
SMBJ80CAL0S0DB	80	88.8	97.6	1	1	4.63	129.6	DB
SMBJ85CL00S0DU	85	94.4	115	1	1	3.97	151	DU

BIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C

Part Code	Working Peak Reverse Voltage	Breakdown Voltage		Test Current	Max. Reverse Leakage	Max. Reverse Surge Current	Max. Clamping Voltage	Marking Code
		VBR @ IT						
	VRWM	Min.	Max.	IT	IR @ VRWM	IPP	VC @ IPP	
	V	V	V	mA	µA	A	V	
SMBJ85CAL0S0DV	85	94.4	104	1	1	4.38	137	DV
SMBJ90CL00S0DW	90	100	122	1	1	3.75	160	DW
SMBJ90CAL0S0DX	90	100	111	1	1	4.11	146	DX
SMBJ100CL0S0DY	100	111	136	1	1	3.35	179	DY
SMBJ100CAL0S0DZ	100	111	123	1	1	3.7	162	DZ
SMBJ110CL0S0ED	110	122	149	1	1	3.06	196	ED
SMBJ110CAL0S0EE	110	122	135	1	1	3.39	177	EE
SMBJ120CL0S0EF	120	133	163	1	1	2.8	214	EF
SMBJ120CAL0S0EG	120	133	147	1	1	3.11	193	EG
SMBJ130CL0S0EH	130	144	176	1	1	2.6	231	EH
SMBJ130CAL0S0EK	130	144	159	1	1	2.87	209	EK
SMBJ140CL0S0EA	140	155.68	190.4	1	1	2.39	250.6	EA
SMBJ140CAL0S0EB	140	155	171	1	1	2.65	226.8	EB
SMBJ150CL0S0EL	150	167	204	1	1	2.24	268	EL
SMBJ150CAL0S0EM	150	167	185	1	1	2.47	243	EM
SMBJ160CL0S0EN	160	178	218	1	1	2.09	287	EN
SMBJ160CAL0S0EP	160	178	197	1	1	2.32	259	EP
SMBJ170CL0S0EQ	170	189	231	1	1	1.97	304	EQ
SMBJ170CAL0S0ER	170	189	209	1	1	2.18	275	ER
SMBJ180CL0S0ES	180	200.16	244.8	1	1	1.86	322.2	ES

BIDIRECTIONAL TYPE- ELECTRICAL CHARACTERISTICS - Ta = 25°C

Part Code	Working Peak Reverse Voltage	Breakdown Voltage		Test Current	Max. Reverse Leakage	Max. Reverse Surge Current	Max. Clamping Voltage	Marking Code
		VBR @ IT						
	VRWM	Min.	Max.	IT	IR @ VRWM	IPP	VC @ IPP	
	V	V	V	mA	μA	A	V	
SMBJ180CALS0ET	180	200	220	1	1	2.06	291.6	ET
SMBJ188CALS0EC	188	209	231	1	1	2	304	EC
SMBJ190CLOS0EU	190	211.28	258.4	1	1	1.76	340.1	EU
SMBJ190CALS0EV	190	211	232	1	1	1.95	307.8	EV
SMBJ200CALS0EW	200	224	247	1	1	1.85	324	EW
SMBJ220CALS0EX	220	246	272	1	1	1.69	356	EX
SMBJ250CALS0EZ	250	279	309	1	1	1.48	405	EZ
SMBJ300CALS0FE	300	335	371	1	1	1.23	486	FE
SMBJ350CALS0FG	350	391	432	1	1	1.06	567	FG
SMBJ400CALS0FK	400	447	494	1	1	0.93	648	FK
SMBJ440CALS0FM	440	492	543	1	1	0.84	713	FM

Note:

- The available parts are "A" type only, the parts without A(VBR is $\pm 10\%$) is not available
- For Bi-Directional devices having Vr of 10 Volts and under, the IR limit is double

RATINGS AND CHARACTERISTICS CURVES- For Reference Only, $T_a=25^{\circ}\text{C}$ Unless Otherwise Specified.

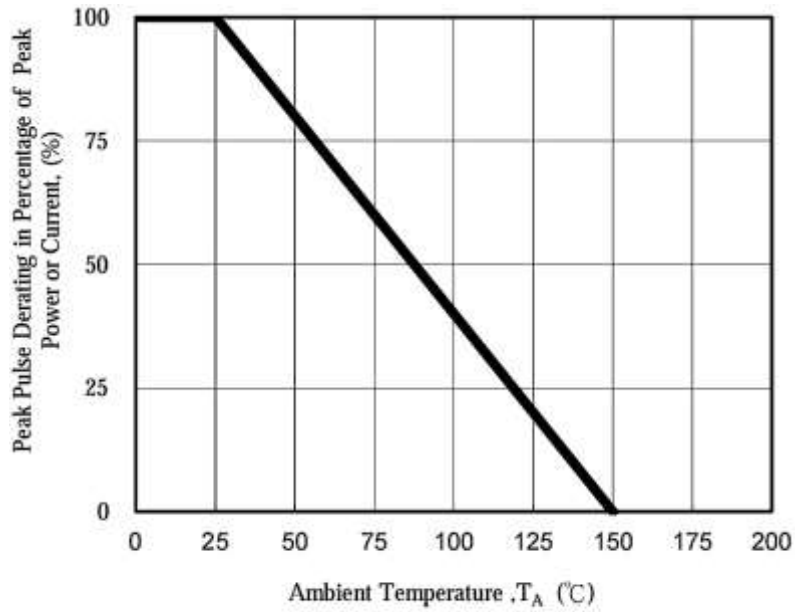


Fig. 1 - Pulse Derating Curve

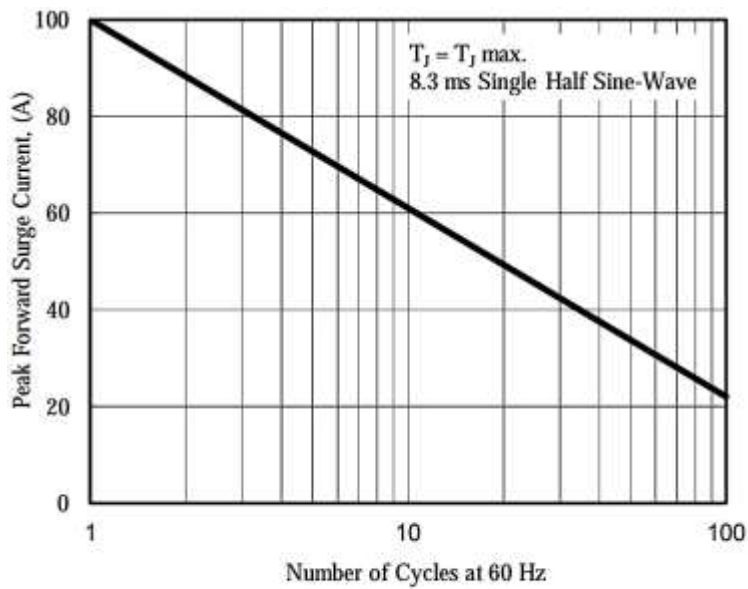


Fig. 2 - Maximum Non-Repetitive Surge Current

RATINGS AND CHARACTERISTICS CURVES- For Reference Only, $T_a=25^{\circ}\text{C}$ Unless Otherwise Specified.

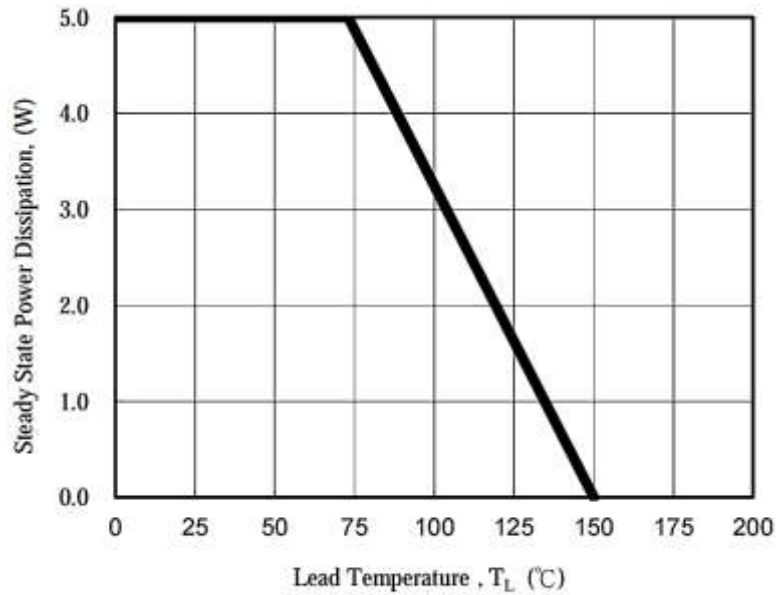


Fig. 3 - Steady State Power Derating Curve

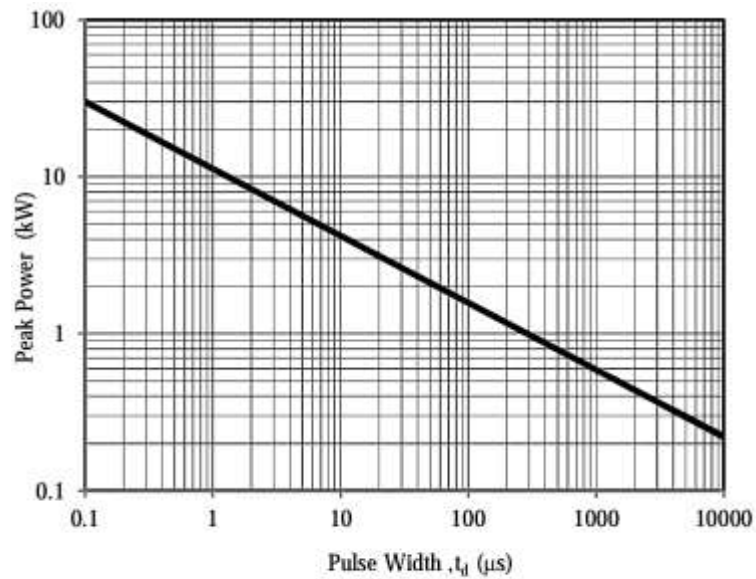


Fig. 4 - Peak Pulse Power Rating Curve

RATINGS AND CHARACTERISTICS CURVES- For Reference Only, Ta=25°C Unless Otherwise Specified.

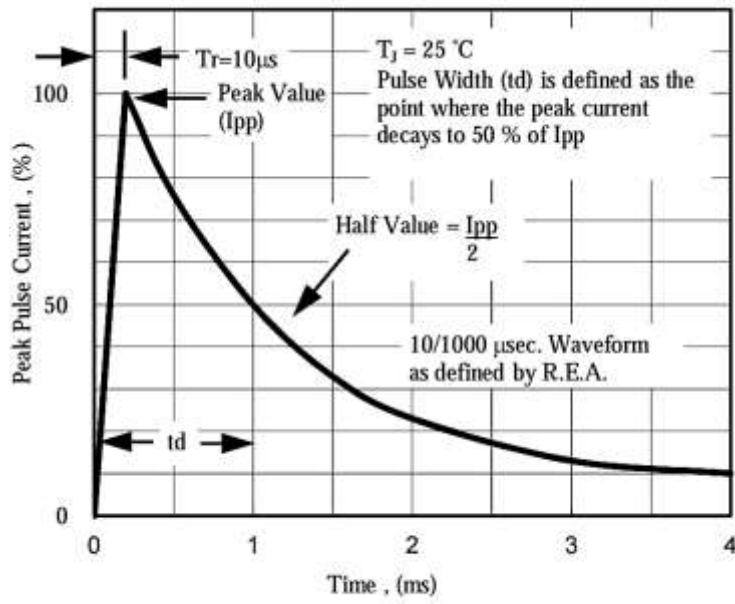


Fig. 5 - Pulse Waveform

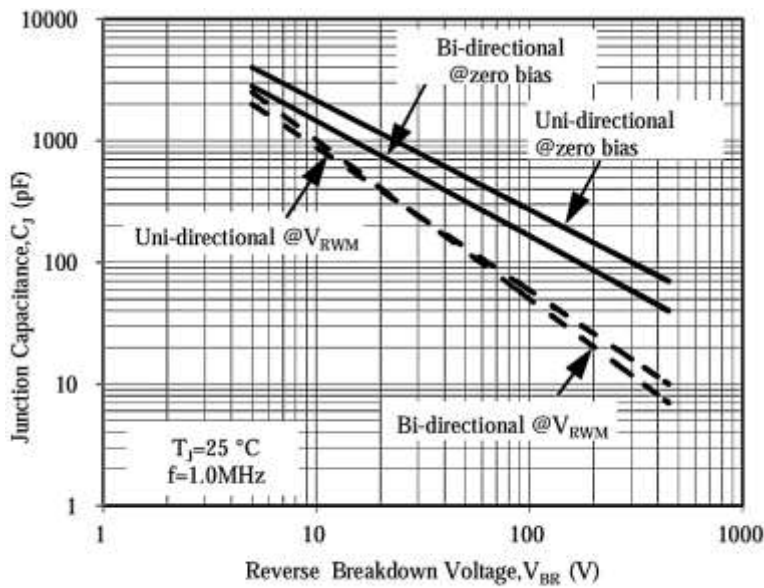
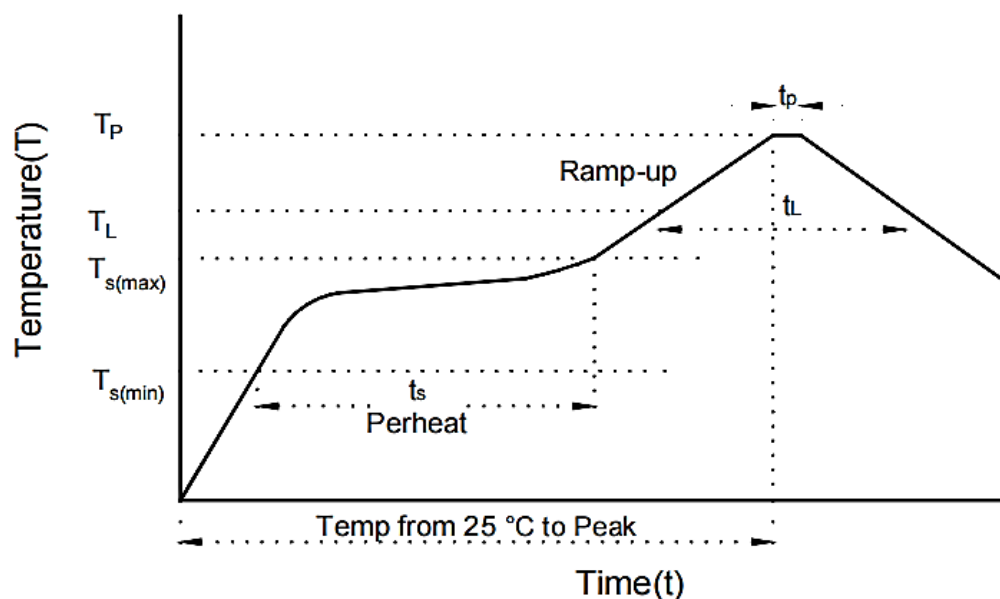


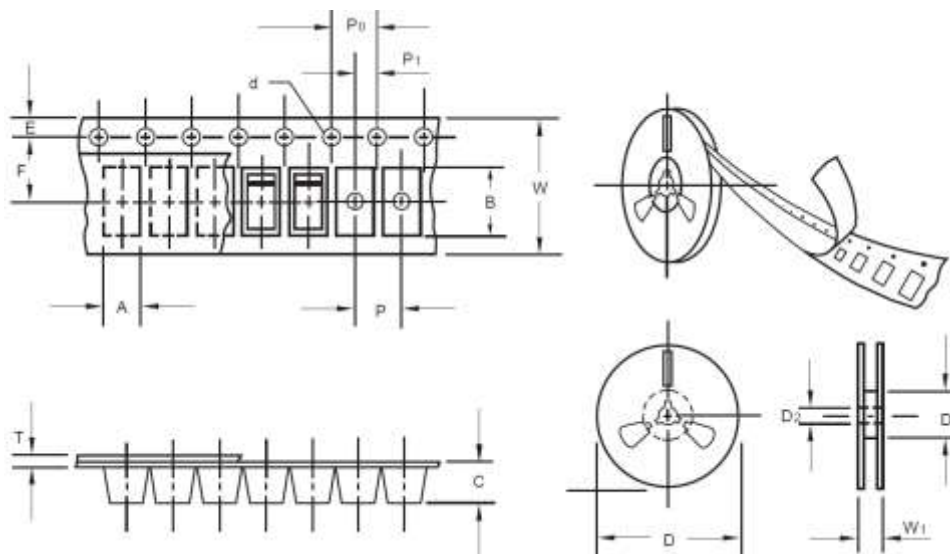
Fig. 6 - Typical Junction Capacitance

RECOMMENDED SOLDERING PARAMETERS – FOR REFERENCE ONLY



PROFILE FEATURE		PB-FREE ASSEMBLY
Average Ramp-up Rate (T_L Max to T_p)		3°C/second Max
Preheat	Temperature Min (T_s Min.)	150°C
	Temperature Max (T_s Max.)	200°C
	Time (t_s Min. to t_s Max.)	60 ~ 180 seconds
Time maintained above	Temperature (T_L)	217°C
	Time (t_L)	60 ~ 150 seconds
Peak/Classification Temperature (T_p)		260 °C
Time within 5°C of actual Peak Temperature (t_p)		20 ~ 40 seconds
Ramp-down Rate		6 °C /Second Max.
Time 25 °C to Peak Temperature		8 Minutes Max.
Suggest reflow times		3 Times Max.

TAPE/REEL - Unit: mm, All Devices are packed in accordance with EIA standard RS-481-A and specifications



ITEM	SYMBOL	TOLERANCE	SMB/DO-214AA
Carrier width	A	0.1	3.81
Carrier Length	B	0.1	5.41
Carrier Depth	C	0.1	2.42
Sprocket hole	d	0.05	1.50
13"Reel outside diameter	D	2.0	330.00
13"Reel inner diameter	D1	Min.	50.00
Feed hole diameter	D2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	5.55
Punch hole pitch	P	0.1	8.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.30
Tape width	W	0.3	12.00
Reel width	W1	1.0	12.30
Qty./Reel (pcs)	3000		

IMPORTANT NOTES AND DISCLAIMER

1. **ROHS COMPLIANCE:** The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU RoHS Directive (EU) 2015/863 EC (RoHS3). RoHS Test Report for this product can be obtained at Download Center.
2. **REACH COMPLIANCE:** REACH substances of high concern (SVHCs) information is available for this product. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, REACH Test Report for this product can be obtained at Download Center.
3. All Product parametric performance is indicated in the Electrical Characteristics for the listed herein test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.
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8. *NextGen* requires that customers first obtain an RMA (Returned Merchandise Authorization) number prior to returning any products. Returns must be made within 30 days of the date of invoice, be in the original packaging, unused and like-new condition. At the time of quoting or purchasing, a product may say that it is Non-Cancelable/ Non-Returnable (NCNR). These products are not returnable and not refundable.