

**SURFACE MOUNT GPP**  
**TRANSIENT VOLTAGE SUPPRESSOR**  
**600 WATT PEAK POWER 5.0 WATTS STEADY STATE**

**FEATURES**

- \* Plastic package has underwriters laboratory
- \* Glass passivated chip construction
- \* 600 watt surge capability at 1ms
- \* Excellent clamping capability
- \* Low zener impedance
- \* Fast response time

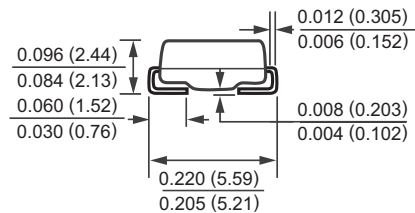
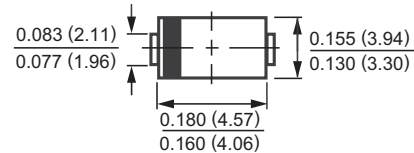
Ratings at 25 °C ambient temperature unless otherwise specified.

**MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS**

Ratings at 25 °C ambient temperature unless otherwise specified.



**DO-214AA**



Dimensions in inches and (millimeters)

**DEVICES FOR BIPOLAR APPLICATIONS**

For Bidirectional use C or CA suffix for types TFMBJ5.0 thru TFMBJ170

Electrical characteristics apply in both direction

**MAXIMUM RATINGS** (At TA = 25°C unless otherwise noted)

RATINGS	SYMBOL	VALUE	UNITS
Peak Power Dissipation with a 10/1000uS (Note 1,2, Fig.1)	PPPM	Minimum 600	Watts
Peak Pulse Current with a 10/1000uS waveform ( Note 1, Fig.3 )	IPPM	SEE TABLE 1	Amps
Steady State Power Dissipation at TL = 75°C (Note 2)	PM(AV)	5.0	Watts
Peak Forward Surge Current 8.3mS single half sine-wave superimposed on rated load (JEDEC method) (Note 2,3) unidirectional only	IFSM	100	Amps
Typical Current Squarad Time	$I^2t$	41.5	A <sup>2</sup> /Sec
Maximum Instantaneous Forward Voltage at 50A for unidirectional only (Note 3,4)	VF	SEE NOTE 4	Volts
Operating and Storage Temperature Range	TJ, TSTG	-55 to + 150	°C

- NOTES : 1. Non-repetitive current pulse, per Fig.3 and derated above TA = 25°C per Fig.2.  
 2. Mounted on 0.2 X 0.2" ( 5.0 X 5.0mm ) copper pad to each terminal.  
 3. Lead temperature at TL = 25°C  
 4. Measured on 8.3mS single half sine-wave duty cycle = 4 pulses per minute maximum.  
 5. VF = 3.5V on TFMBJ-5.0 thru TFMBJ-90 devices and VF = 5.0V on TFMBJ-100 thru TFMBJ-170 devices.

# RATING AND CHARACTERISTIC CURVES ( TFMBJ5.0 THRU TFMBJ170CA )

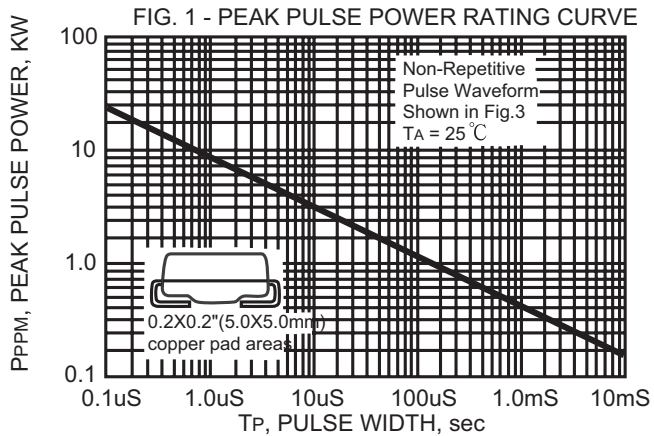


FIG. 3 - PULSE WAVEFORM

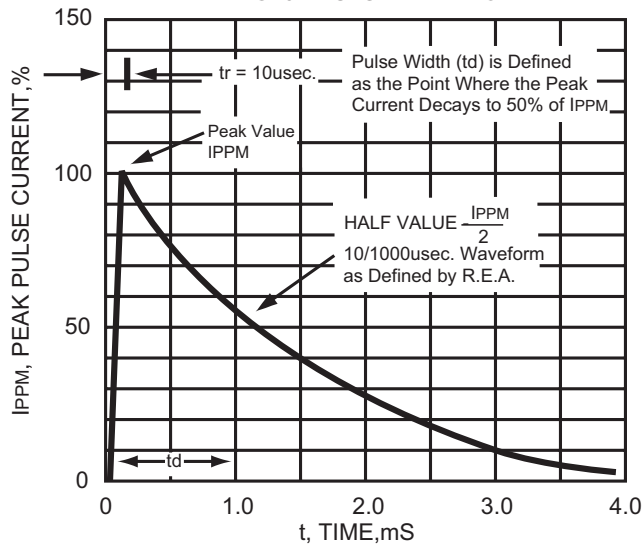


FIG. 5 - TYPICAL JUNCTION CAPACITANCE BIDIRECTIONAL

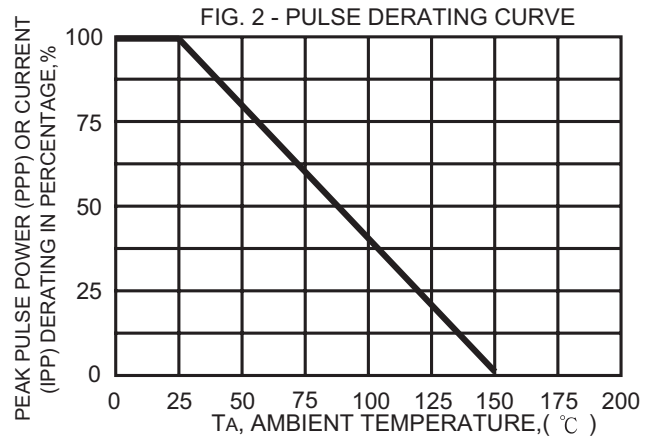
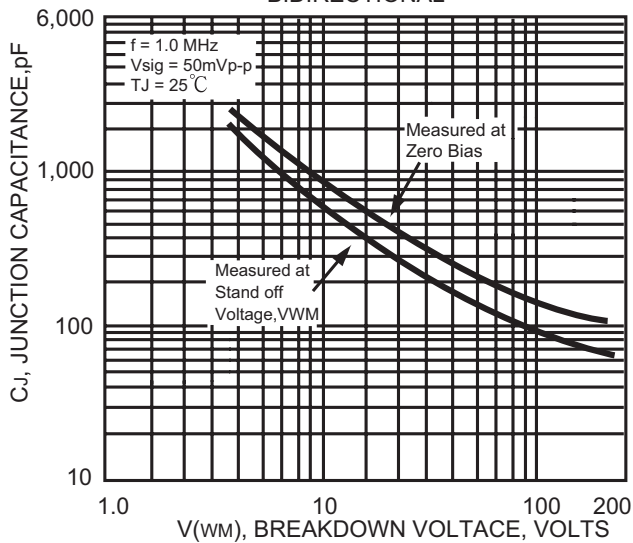


FIG. 4 - TYPICAL JUNCTION CAPACITANCE

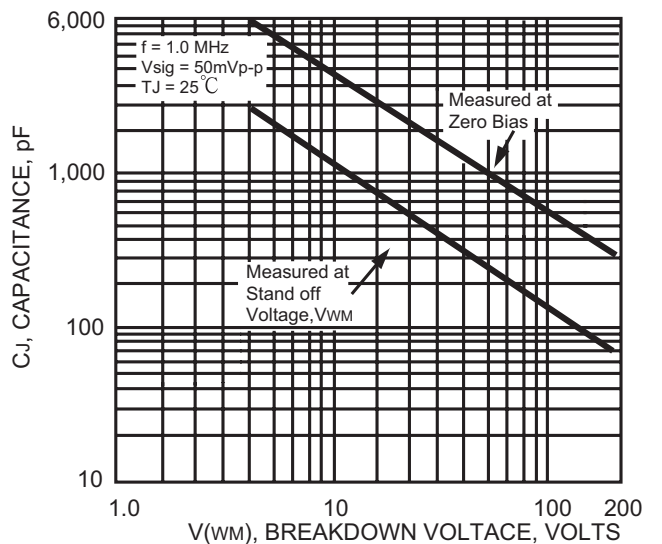
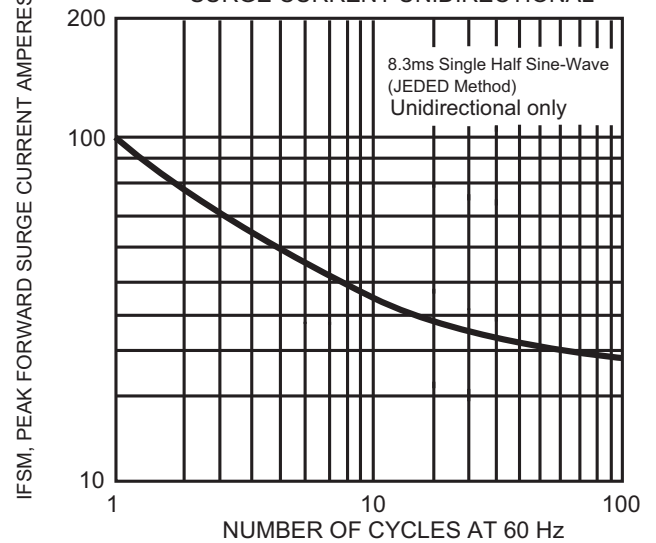


FIG. 6 - MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL



## TRANSIENT VOLTAGE SUPPRESSORS

600W SERIES TVS DIODES / DO-214AA ( CASE 3 ) 600W

Rectron Industry No.	Rectron House No.	Breakdown Voltage			Reverse Stand off Voltage VWM (Volts)	Maximum Reverse Leakage at VWM ID(uA)	Maximum Peak Pulse Current IPPM (Amps)	Maximum Clamping Voltage at IPPM VC (Volts)
		VBR (Volts)		@IT (mA)				
		MIN.	MAX.					
SMBJ5.0	TFMBJ5.0	6.40	7.82	10	5.0	800.0	62.5	9.6
SMBJ5.0A	TFMBJ5.0A	6.40	7.07	10	5.0	800.0	65.2	9.2
SMBJ6.0	TFMBJ6.0	6.67	8.15	10	6.0	800.0	52.6	11.4
SMBJ6.0A	TFMBJ6.0A	6.67	7.37	10	6.0	800.0	58.3	10.3
SMBJ6.5	TFMBJ6.5	7.22	8.82	10	6.5	500.0	48.8	12.3
SMBJ6.5A	TFMBJ6.5A	7.22	7.98	10	6.5	500.0	53.6	11.2
SMBJ7.0	TFMBJ7.0	7.78	9.51	10	7.0	200.0	45.1	13.3
SMBJ7.0A	TFMBJ7.0A	7.78	8.60	10	7.0	200.0	50.0	12.0
SMBJ7.5	TFMBJ7.5	8.33	10.2	1.0	7.5	100.0	42.0	14.3
SMBJ7.5A	TFMBJ7.5A	8.33	9.21	1.0	7.5	100.0	46.5	12.9
SMBJ8.0	TFMBJ8.0	8.89	10.9	1.0	8.0	50.0	40.0	15.0
SMBJ8.0A	TFMBJ8.0A	8.89	9.83	1.0	8.0	50.0	44.1	13.6
SMBJ8.5	TFMBJ8.5	9.44	11.5	1.0	8.5	20.0	37.7	15.9
SMBJ8.5A	TFMBJ8.5A	9.44	10.4	1.0	8.5	20.0	41.7	14.4
SMBJ9.0	TFMBJ9.0	10.0	12.2	1.0	9.0	10.0	35.5	16.9
SMBJ9.0A	TFMBJ9.0A	10.0	11.1	1.0	9.0	10.0	39.0	15.4
SMBJ10	TFMBJ10	11.1	13.6	1.0	10.0	5.0	31.9	18.8
SMBJ10A	TFMBJ10A	11.1	12.3	1.0	10.0	5.0	35.3	17.0
SMBJ11	TFMBJ11	12.2	14.9	1.0	11.0	5.0	29.9	20.1
SMBJ11A	TFMBJ11A	12.2	13.5	1.0	11.0	5.0	33.0	18.2
SMBJ12	TFMBJ12	13.3	16.3	1.0	12.0	5.0	27.3	22.0
SMBJ12A	TFMBJ12A	13.3	14.7	1.0	12.0	5.0	30.2	19.9
SMBJ13	TFMBJ13	14.4	17.6	1.0	13.0	5.0	25.2	23.8
SMBJ13A	TFMBJ13A	14.4	15.9	1.0	13.0	5.0	27.9	21.5
SMBJ14	TFMBJ14	15.6	19.1	1.0	14.0	5.0	23.3	25.8
SMBJ14A	TFMBJ14A	15.6	17.2	1.0	14.0	5.0	25.9	23.2
SMBJ15	TFMBJ15	16.7	20.4	1.0	15.0	5.0	22.3	26.9
SMBJ15A	TFMBJ15A	16.7	18.5	1.0	15.0	5.0	24.6	24.4
SMBJ16	TFMBJ16	17.8	21.8	1.0	16.0	5.0	20.8	28.8
SMBJ16A	TFMBJ16A	17.8	19.7	1.0	16.0	5.0	23.1	26.0
SMBJ17	TFMBJ17	18.9	23.1	1.0	17.0	5.0	19.7	30.5
SMBJ17A	TFMBJ17A	18.9	20.9	1.0	17.0	5.0	21.7	27.6
SMBJ18	TFMBJ18	20.0	24.4	1.0	18.0	5.0	18.6	32.2
SMBJ18A	TFMBJ18A	20.0	22.1	1.0	18.0	5.0	20.5	29.2
SMBJ20	TFMBJ20	22.2	27.1	1.0	20.0	5.0	16.8	35.8
SMBJ20A	TFMBJ20A	22.2	24.5	1.0	20.0	5.0	18.5	32.4
SMBJ22	TFMBJ22	24.4	29.8	1.0	22.0	5.0	15.2	39.4
SMBJ22A	TFMBJ22A	24.4	26.9	1.0	22.0	5.0	16.9	35.5
SMBJ24	TFMBJ24	26.7	32.6	1.0	24.0	5.0	14.0	43.0
SMBJ24A	TFMBJ24A	26.7	29.5	1.0	24.0	5.0	15.4	38.9
SMBJ26	TFMBJ26	28.9	35.3	1.0	26.0	5.0	12.9	46.6
SMBJ26A	TFMBJ26A	28.9	31.9	1.0	26.0	5.0	14.3	42.1
SMBJ28	TFMBJ28	31.1	38.0	1.0	28.0	5.0	12.0	50.0
SMBJ28A	TFMBJ28A	31.1	34.4	1.0	28.0	5.0	13.2	45.4
SMBJ30	TFMBJ30	33.3	40.7	1.0	30.0	5.0	11.2	53.5
SMBJ30A	TFMBJ30A	33.3	36.8	1.0	30.0	5.0	12.4	48.4
SMBJ33	TFMBJ33	36.7	44.9	1.0	33.0	5.0	10.2	59.0
SMBJ33A	TFMBJ33A	36.7	40.6	1.0	33.0	5.0	11.3	53.3
SMBJ36	TFMBJ36	40.0	48.9	1.0	36.0	5.0	9.3	64.3
SMBJ36A	TFMBJ36A	40.0	44.2	1.0	36.0	5.0	10.3	58.1

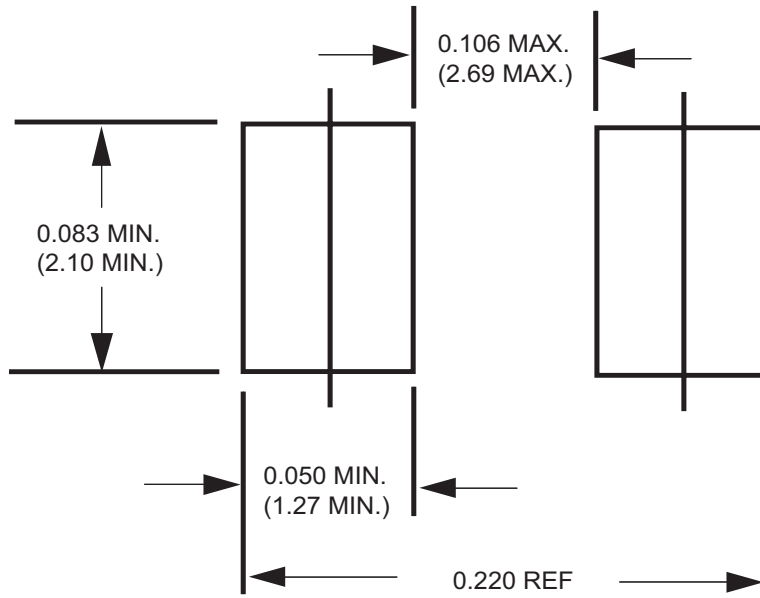
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		VBR (Volts)		@IT (mA)				
		MIN.	MAX.					
SMBJ40	TFMBJ40	44.4	54.3	1.0	40	5.0	8.4	71.4
SMBJ40A	TFMBJ40A	44.4	49.1	1.0	40	5.0	9.3	64.5
SMBJ43	TFMBJ43	47.8	58.4	1.0	43	5.0	7.8	76.7
SMBJ43A	TFMBJ43A	47.8	52.8	1.0	43	5.0	8.6	69.4
SMBJ45	TFMBJ45	50.0	61.1	1.0	45	5.0	7.5	80.3
SMBJ45A	TFMBJ45A	50.0	55.3	1.0	45	5.0	8.3	72.7
SMBJ48	TFMBJ48	53.3	65.1	1.0	48	5.0	7.0	85.5
SMBJ48A	TFMBJ48A	53.3	58.9	1.0	48	5.0	7.8	77.4
SMBJ51	TFMBJ51	56.7	69.3	1.0	51	5.0	6.6	91.1
SMBJ51A	TFMBJ51A	56.7	62.7	1.0	51	5.0	7.3	82.4
SMBJ54	TFMBJ54	60.0	73.3	1.0	54	5.0	6.2	96.3
SMBJ54A	TFMBJ54A	60.0	66.3	1.0	54	5.0	6.9	87.1
SMBJ58	TFMBJ58	64.4	78.7	1.0	58	5.0	5.8	103
SMBJ58A	TFMBJ58A	64.4	71.2	1.0	58	5.0	6.4	93.6
SMBJ60	TFMBJ60	66.7	81.5	1.0	60	5.0	5.6	107
SMBJ60A	TFMBJ60A	66.7	73.7	1.0	60	5.0	6.2	96.8
SMBJ64	TFMBJ64	71.1	86.9	1.0	64	5.0	5.3	114
SMBJ64A	TFMBJ64A	71.1	78.6	1.0	64	5.0	5.8	103
SMBJ70	TFMBJ70	77.8	95.1	1.0	70	5.0	4.8	125
SMBJ70A	TFMBJ70A	77.8	86.0	1.0	70	5.0	5.3	113
SMBJ75	TFMBJ75	83.3	102	1.0	75	5.0	4.5	134
SMBJ75A	TFMBJ75A	83.3	92.1	1.0	75	5.0	5.0	121
SMBJ78	TFMBJ78	86.7	106	1.0	78	5.0	4.3	139
SMBJ78A	TFMBJ78A	86.7	95.8	1.0	78	5.0	4.8	126
SMBJ85	TFMBJ85	94.4	115	1.0	85	5.0	4.0	151
SMBJ85A	TFMBJ85A	94.4	104	1.0	85	5.0	4.4	137
SMBJ90	TFMBJ90	100	122	1.0	90	5.0	3.8	160
SMBJ90A	TFMBJ90A	100	111	1.0	90	5.0	4.1	146
SMBJ100	TFMBJ100	111	136	1.0	100	5.0	3.4	179
SMBJ100A	TFMBJ100A	111	123	1.0	100	5.0	3.7	162
SMBJ110	TFMBJ110	122	149	1.0	110	5.0	3.1	196
SMBJ110A	TFMBJ110A	122	135	1.0	110	5.0	3.4	177
SMBJ120	TFMBJ120	133	163	1.0	120	5.0	2.8	214
SMBJ120A	TFMBJ120A	133	147	1.0	120	5.0	3.1	193
SMBJ130	TFMBJ130	144	176	1.0	130	5.0	2.6	231
SMBJ130A	TFMBJ130A	144	159	1.0	130	5.0	2.9	209
SMBJ150	TFMBJ150	167	204	1.0	150	5.0	2.2	268
SMBJ150A	TFMBJ150A	167	185	1.0	150	5.0	2.5	243
SMBJ160	TFMBJ160	178	218	1.0	160	5.0	2.1	287
SMBJ160A	TFMBJ160A	178	197	1.0	160	5.0	2.3	259
SMBJ170	TFMBJ170	189	231	1.0	170	5.0	2.0	304
SMBJ170A	TFMBJ170A	189	209	1.0	170	5.0	2.2	275

- Notes :
1.  $V_{BR}$  measured after  $I_T$  applied for 300ms.  $I_T$  = square pulse or equivalent.
  2. For bidirectional use C or CA suffixs for all types (ex. SMBJ5.0C,SMBJ170CA) electrical characteristics apply in both directions.
  3. For bidirectional types having  $V_{WM}$  of 10 volts and less, the  $I_D$  limit is doubled.
  4. All devices UL listed file# E211196.

## Mounting Pad Layout



Dimensions in inches and (millimeters)

# REEL TAPING SPECIFICATIONS FOR SURFACE MOUNT DEVICES-FLAT MELF ( SMA/SMB/SMC )

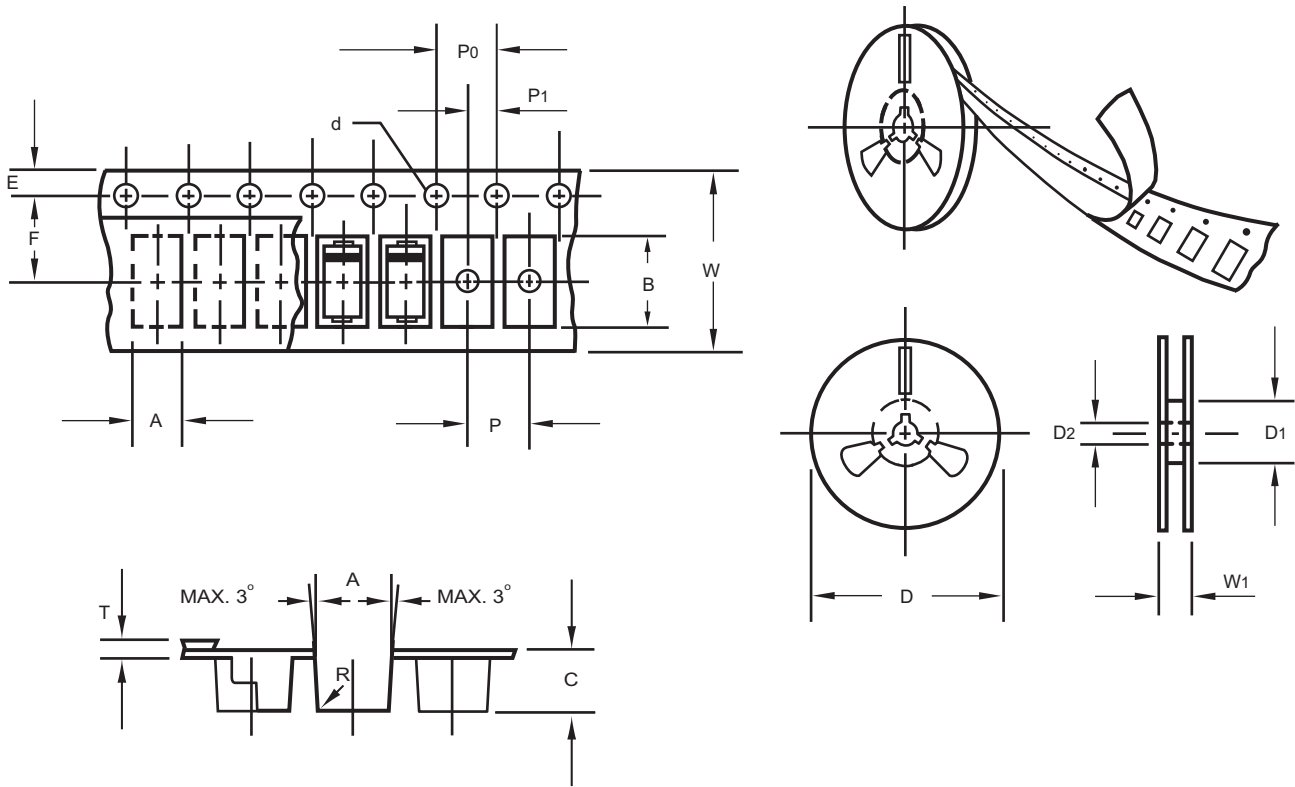


Fig.: Configuration of FLAT MELF TAPING  
( SMA/SMB/SMC )

ITEM	SYMBOL	DO214AC (SMA) mm(inch)	DO214AA (SMB) mm(inch)	DO214AB (SMC) mm(inch)
Carrier width	A	2.6 ± 0.15 (.102 ± .006)	3.65 ± 0.1 (.144 ± .004)	6.0 ± 0.1 (.236 ± .004)
Carrier length	B	5.15 ± 0.15 (.203 ± .006)	5.69 ± 0.1 (.224 ± .004)	8.30 ± 0.1 (.327 ± .004)
Carrier depth	C	2.3 ± 0.15 (.091 ± .006)	2.67 ± 0.1 (.105 ± .004)	2.5 ± 0.1 (.098 ± .004)
Sprocket hole	d	1.5 ± 0.1 (.059 ± .004)	1.5 ± 0.1 (.059 ± .004)	1.5 ± 0.1 (.059 ± .004)
Reel outside diameter	D	178 ± 2.0 (7.0 ± .079)	178 ± 2.0 (7.0 ± .079)	178 ± 2.0 (7.0 ± .079)
Reel inner diameter	D1	50 Min.	50 Min.	50 Min.
Feed hole diameter	D2	13 ± 0.5 (.512 ± .020)	13 ± 0.5 (.512 ± .020)	13 ± 0.5 (.512 ± .020)
Sprocket hole position	E	1.5 ± 0.1 (.059 ± .004)	1.5 ± 0.1 (.059 ± .004)	1.5 ± 0.1 (.059 ± .004)
Punch hole position	F	5.65 ± 0.05 (.222 ± .002)	5.65 ± 0.05 (.222 ± .002)	7.65 ± 0.05 (.301 ± .002)
Punch hole pitch	P	4.0 ± 0.1 (.157 ± .004)	8.0 ± 0.1 (.315 ± .004)	8.0 ± 0.1 (.315 ± .004)
Sprocket hole pitch	P0	4.0 ± 0.1 (.157 ± .004)	4.0 ± 0.1 (.157 ± .004)	4.0 ± 0.1 (.157 ± .004)
Embossment center	P1	2.0 ± 0.1 (.079 ± .004)	2.0 ± 0.1 (.079 ± .004)	4.0 ± 0.1 (.157 ± .004)
Total tape thickness	T	0.30 ± .05 (.012 ± .002)	0.6 Max.	0.6 Max.
Tape width	W	12.0 ± 0.2 (.472 ± .008)	12.0 ± 0.2 (.472 ± .008)	16.0 ± 0.2 (.630 ± .008)
Reel width	W1	16.8 ± 2.0 (.661 ± .079)	16.8 ± 2.0 (.661 ± .079)	24.0 ± 2.0 (.945 ± .079)

Notes: 1.Devices are packed in accordance with EIA standard RS-481-A and specification given above.  
2.Available on 7 inch ( 1500 ct. ) or 13 inch ( 5000 ct. ) diameter reels.

# PACKAGING OF DIODE AND BRIDGE RECTIFIERS

## REEL PACK

PACKAGE	packing code	EA PER REEL	COMPONENT SPACE(mm)	TAPE SPACE (mm)	REEL DIA (mm)	CARTON SIZE (mm)	EA PER CARTON	GROSS WEIGHT(Kg)
R-1	-T	5,000	5.0	52	330	355*360*350	20,000	7.25
A-405	-T	5,000	5.0	330	52	355*360*350	20,000	8.13
DO-41	-T	5,000	5.0	52	330	355*360*350	20,000	10.49
DO-15	-T	4,000	5.0	52	330	355*360*350	16,000	10.05
R-3	-T	3,000	5.0	52	330	355*360*350	12,000	10.37
DO-201AD	-T	1,200	9.5	52	330	355*360*350	4,800	8.93
1.5KE	-T	1,200	10.0	52.4	330	355*360*350	4,800	8.05
R-6	-T	500	9.5	52	330	355*360*350	2,000	7.29
SMA	-T	1,500	---	---	178	465*220*260	48,000	8.40
SMA	-W	5,000	---	---	330	355*360*350	80,000	14.20
MELF	-T	1,500	---	---	178	465*220*260	48,000	11.14
MELF	-W	5,000	---	---	330	355*360*350	80,000	19.60
DB-S	-T	1,000	---	---	330	355*360*350	8,000	9.85
MD	-T	500	---	---	178	465*220*260	16,000	---
MD	-W	3,000	---	---	330	355*360*350	48,000	15.50
SMB	-T	500	---	---	178	465*220*260	16,000	---
SMB	-W	3,000	---	---	330	355*360*350	48,000	13.90
SMC	-T	500	---	---	176	465*220*260	12,000	---
SMC	-W	3,000	---	---	330	355*360*350	24,000	11.50
D2PAK	-W	800	---	---	330	355*360*350	6,400	---

## AMMO PACK

PACKAGE	PACKING CODE	REEL ( EA )	COMPONENT SPACE(mm)	TAPE SPACE (mm)	BOX SIZE (mm)	CARTON SIZE(mm)	CARTON ( EA )	GROSS WEIGHT (Kg)
R-1	-F	3,000	5.0	52	255*73*100	402*270*225	30,000	8.5
A-405	-F	3,000	5.0	52	255*73*100	402*270*225	30,000	9.6
DO-41	-F	3,000	5.0	52	255*73*100	402*270*225	30,000	13.0
DO-15	-F	1,500	5.0	52	255*73*100	402*270*225	15,000	8.8
R-3	-F	1,500	5.0	52	255*73*100	402*270*225	15,000	11.2
DO-201AD	-F	600	9.5	52	255*73*100	402*270*225	6,000	9.9
R-6	-F	300	9.5	52	255*73*100	402*270*225	3,000	8.7
R-1	-E	3,000	5.0	26	256*46*94	347*320*220	42,000	8.35
A-405	-E	3,000	5.0	26	256*46*94	347*320*220	42,000	9.61
DO-41	-E	3,000	5.0	26	256*46*94	347*320*220	42,000	12.41
R-1	-J	3,000	12.7	---	328*170*42	355*360*350	42,000	13.93
R-1	-I	2,000	12.7	---	328*170*42	355*360*350	28,000	9.31
A405	-N	2,000	12.7	---	328*170*42	355*360*350	28,000	11.41

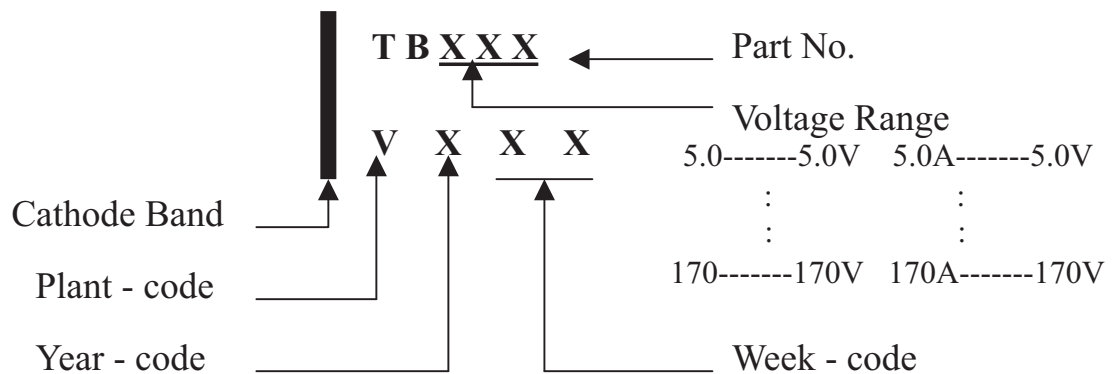


## Attachment information about TFMBJXXX

### 1. Internal Circuit



### 2. Marking on the body



### 3. The net weight 98mg / pcs

### 4. Taping packaging specification

- 4.1 All polarized components must be oriented in one direction.
- 4.2 Keep 19~20 cm empty tape at the beginning of per reel.
- 4.3 Keep 39~41 cm empty tape at the ending of per reel.





## **Attachment information about TFMBJXXX**

### **5. Items marked on the reel box and carton**

#### **5.1 On the reel (for -T & -W)**

**CUSTOMER**

**TYPE**

**QUANTITY**

**LOT NO.**

**Q.A.**

**REMARK**

#### **5.2 On the box (for -T & -W)**

**TYPE**

**QUANTITY**

**LOT NO.**

**Q.A.**

#### **5.3 On the carton**

**CUSTOMER**

**TYPE**

**QUANTITY**

**LOT NO.**

**REMARK**

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