

**FAST RECOVERY RECTIFIER**

**VOLTAGE RANGE 50 to 100 Volts CURRENT 6.0 Amperes**

**FEATURES**

- \* Fast switching
- \* Low leakage
- \* Low forward voltage drop
- \* High current capability
- \* High current surge
- \* High reliability

**MECHANICAL DATA**

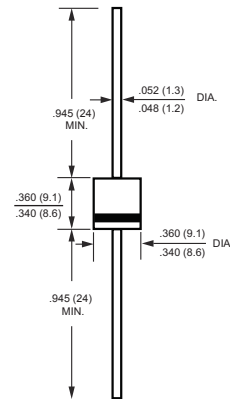
- \* Case: Molded plastic
- \* Epoxy: Device has UL flammability classification 94V-0
- \* Lead: MIL-STD-202E method 208C guaranteed
- \* Mounting position: Any

**MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS**

Ratings at 25 °C ambient temperature unless otherwise specified.  
Single phase, half wave, 60 Hz, resistive or inductive load.  
For capacitive load, derate current by 20%.



R-6



Dimensions in inches and (millimeters)

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

RATINGS	SYMBOL	FR601	FR602	FR603	FR604	FR605	FR606	FR607	UNITS
Maximum Recurrent Peak Reverse Voltage	V <sub>RRM</sub>	50	100	200	400	600	800	1000	Volts
Maximum RMS Voltage	V <sub>RMS</sub>	35	70	140	280	420	560	700	Volts
Maximum DC Blocking Voltage	V <sub>DC</sub>	50	100	200	400	600	800	1000	Volts
Maximum Average Forward Rectified Current at TA = 75°C	I <sub>O</sub>	6.0							Amps
Peak Forward Surge Current 8.3 ms single half sine-wave superimposed on rated load (JEDEC method)	I <sub>FSM</sub>	300							Amps
Typical Current Squared Time	I <sup>2</sup> T	374							A <sup>2</sup> S
Typical Junction Capacitance (Note 2)	C <sub>J</sub>	150							pF
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to + 150							°C

**ELECTRICAL CHARACTERISTICS** (At TA = 25°C unless otherwise noted)

CHARACTERISTICS	SYMBOL	FR601	FR602	FR603	FR604	FR605	FR606	FR607	UNITS
Maximum Instantaneous Forward Voltage at 6.0A DC	V <sub>F</sub>	1.3							Volts
Maximum DC Reverse Current at Rated DC Blocking Voltage TA = 25°C	I <sub>R</sub>	10							uAmps
Maximum Full Load Reverse Current Average, Full Cycle .375" (9.5mm) lead length at TL = 55°C		150							uAmps
Maximum Reverse Recovery Time (Note 1)	t <sub>rr</sub>	150				250	500		nSec

NOTES : 1. Test Conditions: I<sub>F</sub> = 0.5A, I<sub>R</sub> = -1.0A, I<sub>RR</sub> = -0.25A  
2. Measured at 1 MHz and applied reverse voltage of 4.0 volts

# RATING AND CHARACTERISTIC CURVES ( FR601 THRU FR607 )

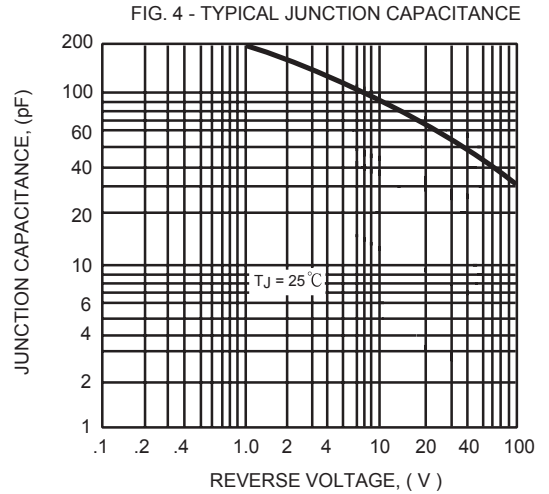
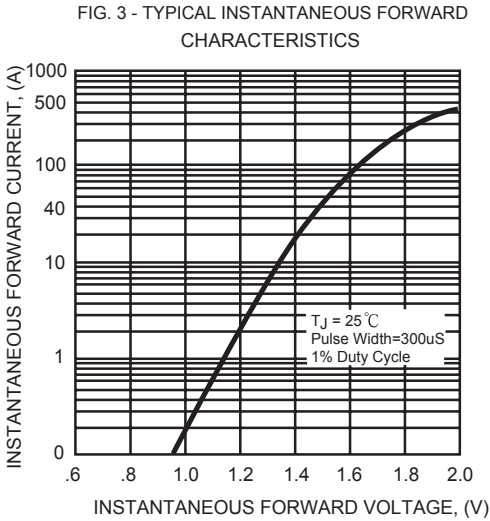
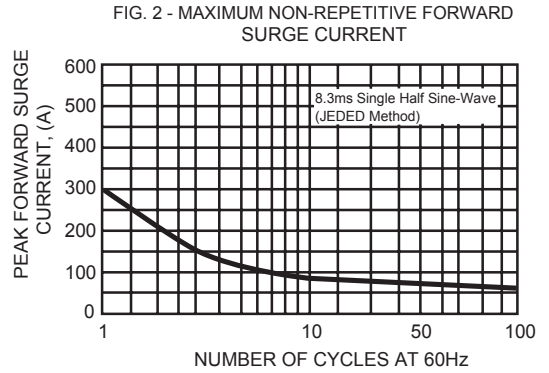
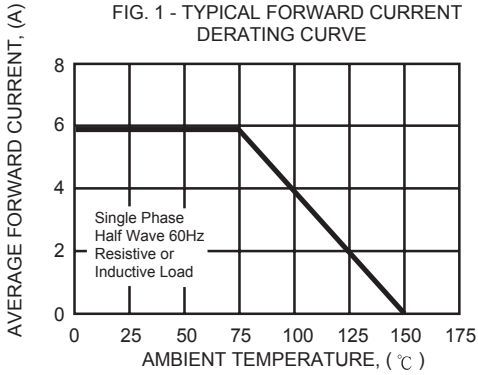
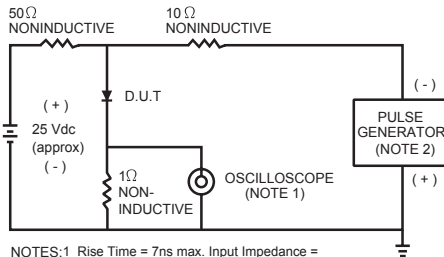
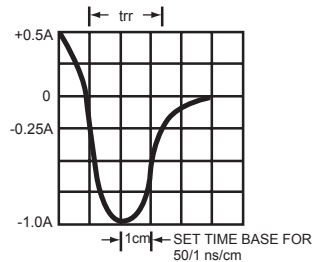


FIG. 5 - TEST CIRCUIT DIAGRAM AND REVERSE RECOVERY TIME CHARACTERISTIC



NOTES: 1 Rise Time = 7ns max. Input Impedance = 1 megohm, 22pF.  
2. Rise Time = 10ns max. Source Impedance = 50 ohms.



# AXIAL LEAD TAPING SPECIFICATIONS FOR RECTIFIERS

Axial lead devices are packed in accordance with EIA standard RS-296-D and specifications given below.

COMPONENT OUTLINE	COMPONENT PITCH A	INNER TAPE PITCH B		CUMULATIVE PITCH TOLERANCE
	$\pm 0.5\text{mm} (.020")$	$\pm 0.5\text{mm} (.020")$	$\pm 1.5\text{mm} (.059")$	
T-1	5.0mm	26.0mm		2.0mm/20pitch
R-1	5.0mm	26.0mm		2.0mm/20pitch
R-1	5.0mm		52.4mm	2.0mm/20pitch
A-405	5.0mm	26.0mm		2.0mm/20pitch
A-405	5.0mm		52.4mm	2.0mm/20pitch
DO-41	5.0mm	26.0mm		2.0mm/20pitch
DO-41	5.0mm		52.4mm	2.0mm/10pitch
DO-15	5.0mm		52.4mm	2.0mm/10pitch
R-3	5.0mm		52.4mm	2.0mm/10pitch
DO-201AD	10.0mm		52.4mm	2.0mm/10pitch
R-6	10.0mm		52.4mm	2.0mm/10pitch
1.5KE	10.0mm		52.4mm	2.0mm/10pitch

Note: -E for 26mm inner tape pitch  
-F & -T for 52mm inner tape pitch

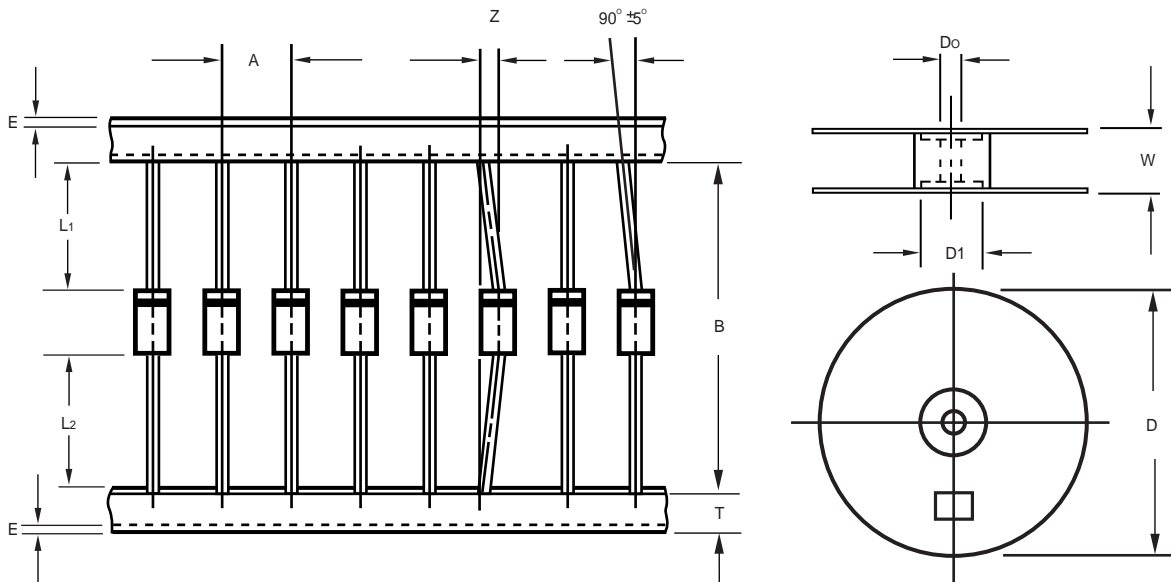


Fig.: Configuration of AXIAL LEAD TAPING

ITEM	SYMBOL	SPECIFICATIONS (mm)	SPECIFICATIONS (inch)
Component alignment	Z	1.2 Max.	0.048 Max.
Tape width	T	$6.0 \pm 0.4$	$0.236 \pm 0.016$
Exposed adhesive	E	0.8 Max.	0.032 Max.
Body eccentricity	$ L1-L2 $	1.0 Max.	0.040 Max.
Reel outside diameter	D	330.0	13.0
Reel inner diameter	D1	$85.7 \pm 0.3$	$3.375 \pm 0.012$
Feed hole diameter	Do	$30.5 \pm 0.4$	$1.201 \pm 0.016$
Reel width	W	$79.0 \pm 1.0$	$3.110 \pm 0.040$

Notes : 1. Each component lead shall be sandwiched between tapes for a minimum of 3.2mm (0.126").  
2. The reel width "W" for 26mm taping is  $50.0 \pm 1.0\text{mm} (1.97" \pm 0.040")$ .

# 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*350*335	20,000	7.37
A-405	-T	5,000	5.0	52	330	355*350*335	20,000	8.13
DO-41	-T	5,000	5.0	52	330	355*350*335	20,000	10.49
DO-15	-T	4,000	5.0	52	330	355*350*335	16,000	10.05
R-3	-T	3,000	5.0	52	330	355*350*335	12,000	10.60
DB	-T	1,000	9.5	52	176	355*360*350	8,000	9.80
DO-201	-T	1,200	9.5	52	330	355*350*335	4,800	9.10
R-6	-T	500	9.5	52	330	355*350*335	2,000	7.5
3KP28A	-T	500	9.5	52	330	355*350*335	2,000	7.5
SMA	-T	1,500	---	---	178	390*205*310	48,000	8.40
SMA	-W	5,000	---	---	330	355*360*350	80,000	14.20
MELF	-T	1,500	---	---	178	390*205*310	48,000	11.20
MELF	-W	5,000	---	---	330	355*360*350	80,000	19.60
MD	-T	500	---	---	178	390*205*310	16,000	---
MD	-W	3,000	---	---	330	355*360*350	48,000	15.50
SMB	-T	500	---	---	178	390*205*310	16,000	---
SMB	-W	3,000	---	---	330	355*360*350	48,000	13.90
SMC	-T	500	---	---	176	390*205*310	12,000	6.65
SMC	-W	3,000	---	---	330	355*360*350	24,000	11.50
SMX	-T	1,500	---	---	330	390*205*310	48,000	---
SMX	-W	5,000	---	---	180	355*360*350	80,000	15.20
1.5KE	-T	1,200	10.0	52.4	330	355*360*350	4,800	8.05
SOD-123F/ SOD-123FL	-W	2,500	---	---	178	390*205*310	100,000	5.804

## 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	400*268*225	30,000	8.5
A-405	-F	3,000	5.0	52	255*73*100	400*268*225	30,000	9.6
DO-41	-F	3,000	5.0	52	255*73*100	400*268*225	30,000	13.0
DO-15	-F	1,500	5.0	52	255*73*100	400*268*225	15,000	8.8
R-3	-F	1,500	5.0	52	255*73*100	400*268*225	15,000	11.2
DO-201	-F	600	9.5	52	255*73*100	400*268*225	6,000	9.9
R-6	-F	300	9.5	52	255*73*100	400*268*225	3,000	8.5
R-1	-E	3,000	5.0	26	256*48*94	365*270*217	42,000	8.35
A-405	-E	3,000	5.0	26	256*48*94	365*270*217	42,000	9.61
DO-41	-E	3,000	5.0	26	256*48*94	365*270*217	42,000	12.41
R-1	-J	3,000	12.7	---	325*170*40	355*350*335	42,000	13.93
R-1	-I	2,000	12.7	---	325*170*40	355*350*335	28,000	9.69
A405	-N	2,000	12.7	---	325*170*40	355*350*335	28,000	11.41

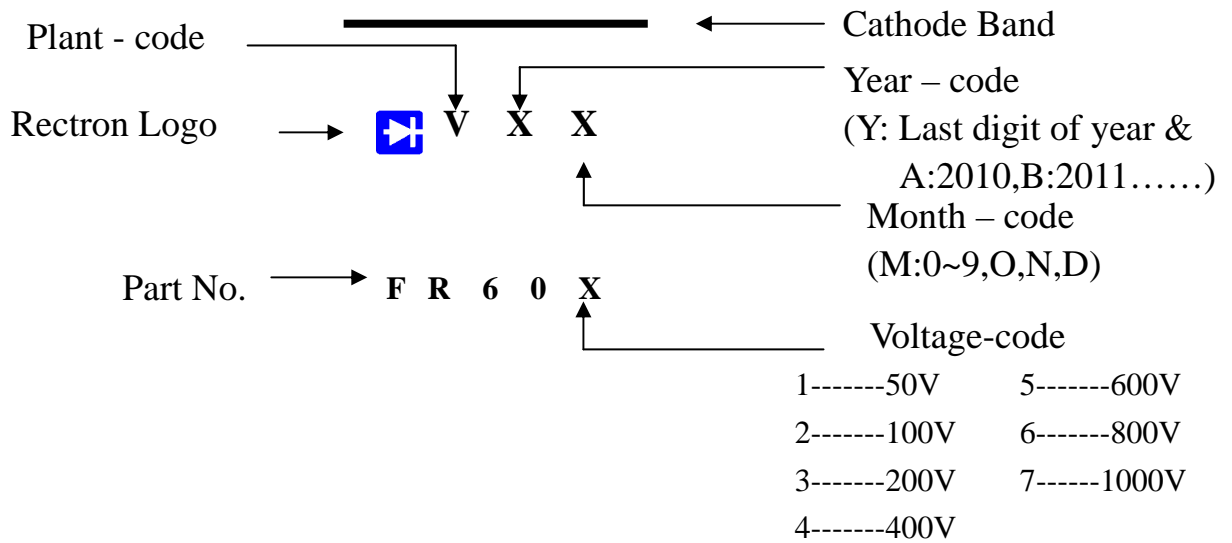


## Attachment information about FR60X

### 1. Internal Circuit



### 2. Marking on the body





## **Attachment information about FR60X**

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

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

**CUSTOMER**

**TYPE**

**QUANTITY**

**LOT NO.**

**Q.A.**

**REMARK**

#### **5.2 On the box (for -E & -F)**

**TYPE**

**QUANTITY**

**LOT NO.**

**Q.A.**

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

**CUSTOMER**

**TYPE**

**QUANTITY**

**LOT NO.**

**REMARK**

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