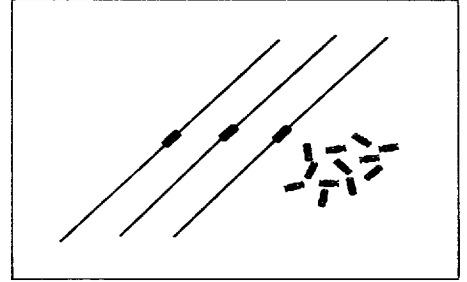


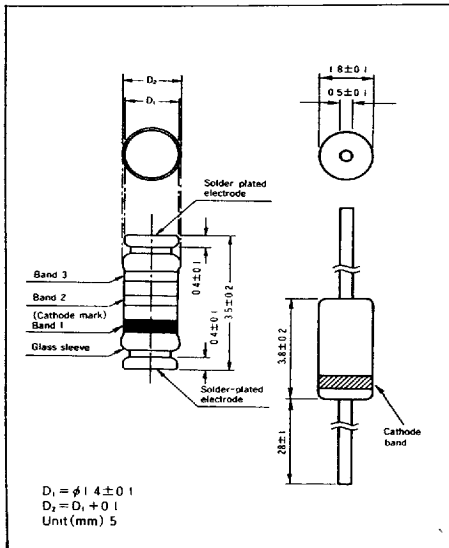
# CRD

T-11-27

CRD is a diode which supplies constant current to an electronic circuit, even when power supply voltage fluctuations or load impedance fluctuations occur. CRD is used for current stabilization and current limiting.



### Outline dimensional drawing

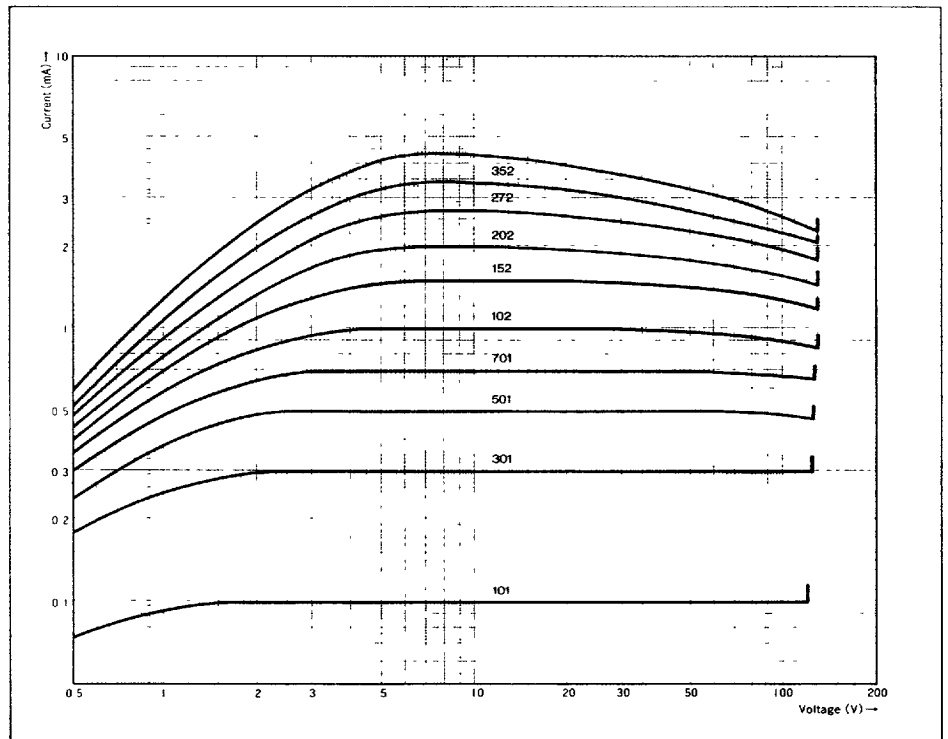


### Specifications

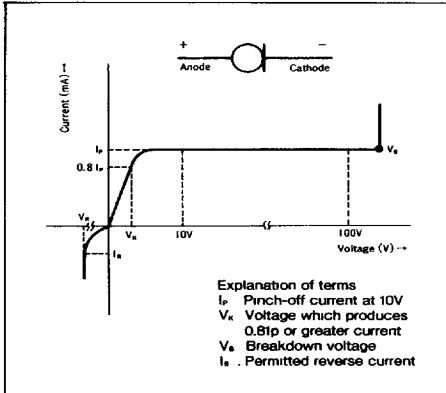
Type	Pinch-off current*1	Limiting current**2	Dynamic impedance	Limiting current ratio	Temperature coefficient**4	Indication
lead less	Test voltage	$I_p$ (mA)	$V_k$ (V)	$I_k$ (mA)		
F-101L E-101L	10V	0.01~0.06	0.4	min0.81 <sub>p</sub>	8.00	max 1:1 +2.1~-+0.10 1L
F-101 E-101	10V	0.05~0.21	0.5	min0.81 <sub>p</sub>	6.00	max 1:1 +2.1~-+0.10 01
F-301 E-301	10V	0.20~0.42	0.8	min0.81 <sub>p</sub>	4.00	max 1:1 +0.4~-+0.20 03
F-501 E-501	10V	0.40~0.63	1.1	min0.81 <sub>p</sub>	2.00	max 1:1 +0.1~-+0.25 05
F-701 E-701	10V	0.60~0.92	1.4	min0.81 <sub>p</sub>	1.00	max 1:1 0.0~-+0.32 07
F-102 E-102	10V	0.88~1.32	1.7	min0.81 <sub>p</sub>	0.65	max 1:1 -0.1~-+0.37 10
F-152 E-152	10V	1.28~1.72	2.0	min0.81 <sub>p</sub>	0.40	max 1:1 -0.1~-+0.40 15
F-202 E-202	10V	1.68~2.32	2.3	min0.81 <sub>p</sub>	0.25	max 1:1 -0.1~-+0.42 20
F-272 E-272	10V	2.28~3.10	2.7	min0.81 <sub>p</sub>	0.15	max 1:1 -0.1~-+0.45 27
F-352 E-352	10V	3.00~4.10	3.2	min0.81 <sub>p</sub>	0.10	max 1:1 -0.2~-+0.47 35
F-452 E-452	10V	3.90~5.10	3.7	min0.81 <sub>p</sub>	0.07	max 1:1 -0.2~-+0.50 45
F-562 E-562	10V	5.00~6.50	4.5	min0.81 <sub>p</sub>	0.04	max 1:1 -0.2~-+0.53 56

\*1 \*2 Pinch-off current and limiting current are measured by impulse wave at 25°C  
 \*3 ZT is minimum AC impedance when minimal voltage of 90Hz AC is added to 25 V<sub>DC</sub>. ZT is used as the reference value  
 \*4 Temperature coefficient is measured between 25°C and 50°C

### Dynamic characteristics (saturation characteristics)



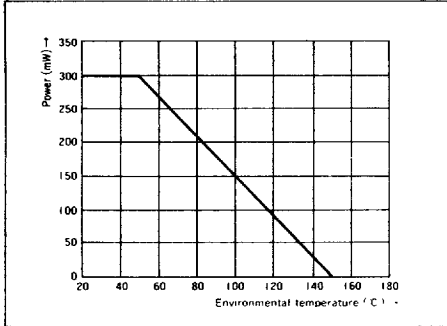
### Basic characteristics



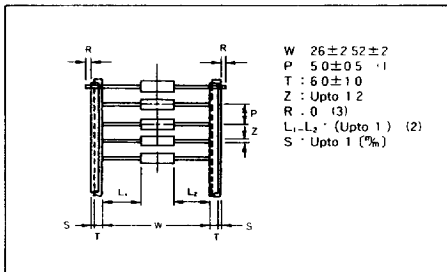
### Maximum ratings

Type	E type	F type
Power	300mW	400mW
thermal resistance	300°C/W	150°C/W
Maximum rating voltage	100V	
Reverse current	50mA	
Temperature	-30°C~+150°C	

**Power derating**

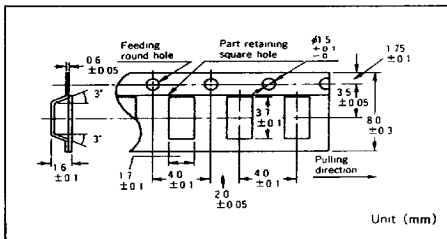


CRD permits the taping. There are two types of lead, one is 52 mm and the other is 26 mm of tape distance. There are two types of package, one is the roll (R) and the other is the fold (Z). Please indicate the taping package by the suffix following CRD Type No., e.g., 52R, 52Z, etc. Taping package minimum quantity is 5,000 pcs. in R and 1,000 pcs. in Z. Following diagram indicates the Lead-less Type taping dimensions. Minimum quantity of the taping package is 1,000 pcs. in one roll.



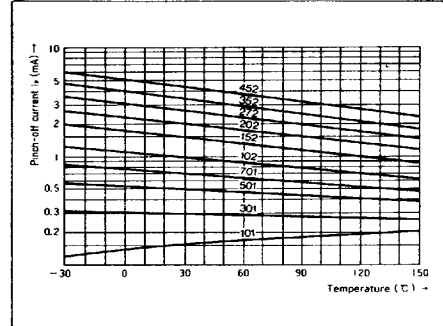
- (1) Cumulative pitch tolerance ±2 mm for 20 pitches
- (2) Absolute value between L1 and L2
- (3) Lead terminal should not protrude from the tape

**Taping External Dimension**



\*In principal elements are set with cathode side on the round hole side

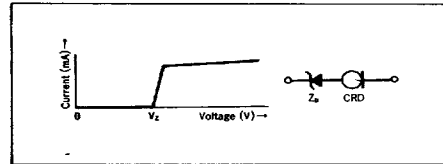
**Pinch-off current Temperature**



**CRD in parallel**

The use of CRD in parallel increases their current handling capabilities

Increasing the voltage range using a zener diode  
Connecting zener diodes in series with the line ensures that the current is constant in high-voltage area.



**Application**

(a) Emitter or source bias

(b) DC coupling

(c) Differential amplification

(d) Low voltage regulator

(e) Combination of CRD and VRD

(f) Timing circuit

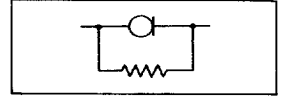
(g) Current amplification

(h) Sawtooth waveform

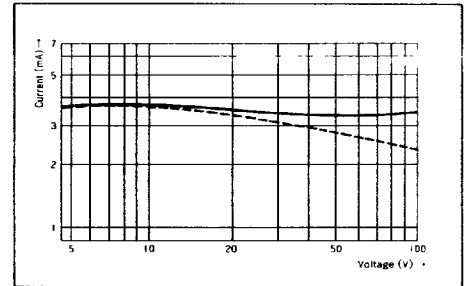
The compensation of current reduction due to self heating

Placing resistors in parallel with CRD can correct any current decrease when the applied voltage increases. The following values are typical for correction resistors.

- 102 1 MΩ
- 152 390 kΩ
- 202 240 kΩ
- 272 120 kΩ
- 352 82 kΩ



Compensative resistor is not necessary if the current value is less than 1 mA



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