

CURRENT REGULATIVE DIODE

# CRD

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

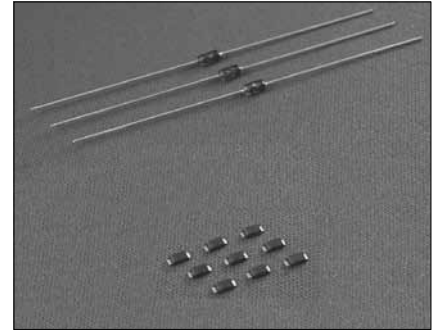
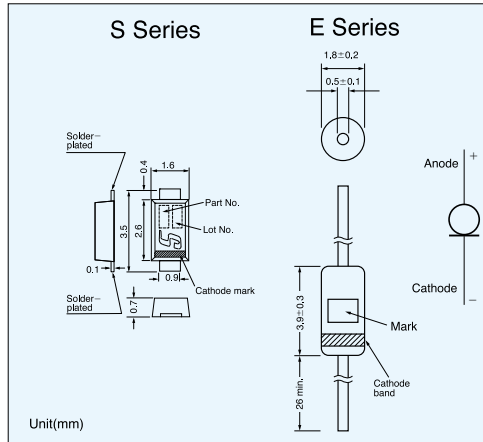
Part number

**102**

Packing condition  
 None : E Series, Individually packed in a bag  
 26Z : E Series, 26mm wide axial tapping winding type  
 26R : E Series, 26mm wide axial tapping role type  
 52Z : E Series, 52mm wide axial tapping winding type  
 52R : E Series, 52mm wide axial tapping role type  
 RE : E Series, Radial tapping winding type  
 T : S Series, Taping role

Pinch off current  
 e.g.) : 301 →  $30 \times 10^1 \mu A = 0.3mA$   
 102 →  $10 \times 10^2 \mu A = 1.0mA$   
 452 →  $45 \times 10^2 \mu A = 4.5mA$

E : Lead wire type  
 S : SMD type



Specifications

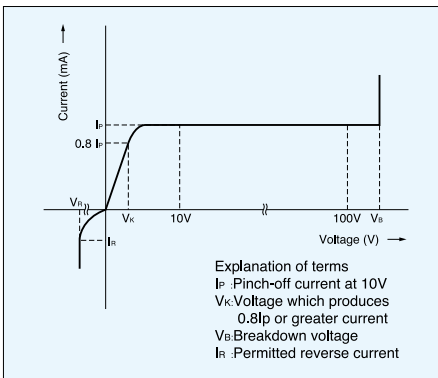
Part No.	SMD	With Lead	Pinch-off current*1		Limiting current*2		Limiting current ratio $I_{100V}/I_p^* I_{30V}/I_p$	Temperature Coefficient (% / °C)
			Test Voltage	$I_p$ (mA) Typical	min~max	$V_k$ (V)		
S-101T	E-101		10V	0.10	0.05~0.21	0.5	1.1 max	+2.10~+0.10
S-301T	E-301			0.30	0.20~0.42	0.8		+0.40~-0.20
S-501T	E-501			0.50	0.40~0.63	1.1		+0.15~-0.25
S-701T	E-701			0.70	0.60~0.92	1.4		0.00~-0.32
S-102T	E-102			1.00	0.88~1.32	1.7		-0.10~-0.37
S-152T	E-152			1.50	1.28~1.72	2.0		-0.13~-0.40
S-202T	E-202			2.00	1.68~2.32	2.3		-0.15~-0.42
S-272T	E-272			2.70	2.28~3.10	2.7		-0.18~-0.45
S-352T	E-352			3.50	3.00~4.10	3.2		-0.20~-0.47
S-452T	E-452			4.50	3.90~5.10	3.7		-0.22~-0.50
S-562T	E-562			5.60	5.00~6.50	4.5		-0.25~-0.53
S-822T	E-822			8.20	6.56~9.84	3.1	*1.0 max	-0.25~-0.45
S-103T	E-103			10.0	8.00~12.0	3.5		-0.25~-0.45
S-123T	E-123			12.0	9.60~14.4	3.8		-0.25~-0.45
S-153T	E-153			15.0	12.0~18.0	4.3		-0.25~-0.45
S-183T	E-183			18.0	16.0~20.0	4.6		-0.25~-0.45

\*1,\*2 Pinch-off current limiting current are measured by impulse wave at 25°C

\*3 Temperature coefficient is measured between 25°C and 50°C.

\* $I_{30V}/I_p$

Basic characteristics



Ratings

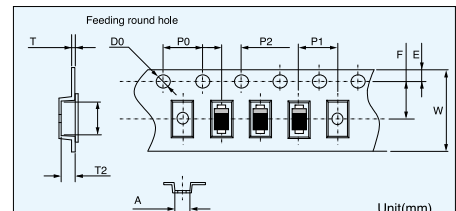
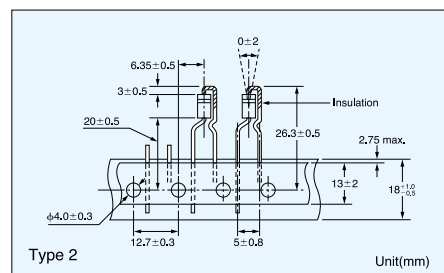
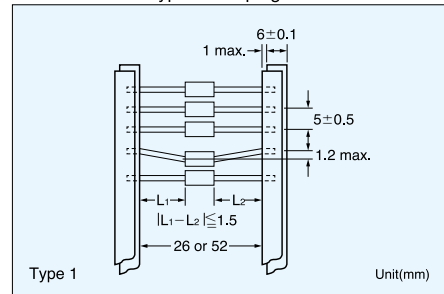
	E series	S series
Rating power	300mW	500mW
Rated voltage (Pulse wave)	100V(E-101~E-562) 50V(E-822~E-183)	100V(S-101T~S-562T) 50V(S-822T~S-183T)
Reverse current	50mA	
Junction temp	150°C	
Operating temp	-30°C~150°C / -40°C~150°C	

Maximum rating voltage

Part No.	Voltage	Part No.	Voltage
E101~E-562	100V	S-101T~S-562T	100V
E-822	30	S-822T	50
E-103		S-103T	
E-123		S-123T	
E-153	25	S-153T	40
E-183		S-183T	

Taping

There are three Types for taping.



A	B	W	F	E	P0	P1	P2	D0	T	T2
1.8	3.74	8.0	3.50	1.75	4.0	4.0	2.00	±1.5	0.2	0.9
$\pm 0.1$										

Type 3

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

Minimum taping quantity for

- Type 1 Roll.....5000pcs
- Box.....2500pcs
- Type 2 4000pcs
- Type 3 3000pcs

### Power derating



### 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.



### 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.

E-102	1M $\Omega$	E-352	82k $\Omega$
E-152	390k $\Omega$	E-452	56k $\Omega$
E-202	240k $\Omega$	E-562	39k $\Omega$
E-272	120k $\Omega$		



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



### Dynamic characteristics (saturation characteristics)

