CRFM154-T3

List

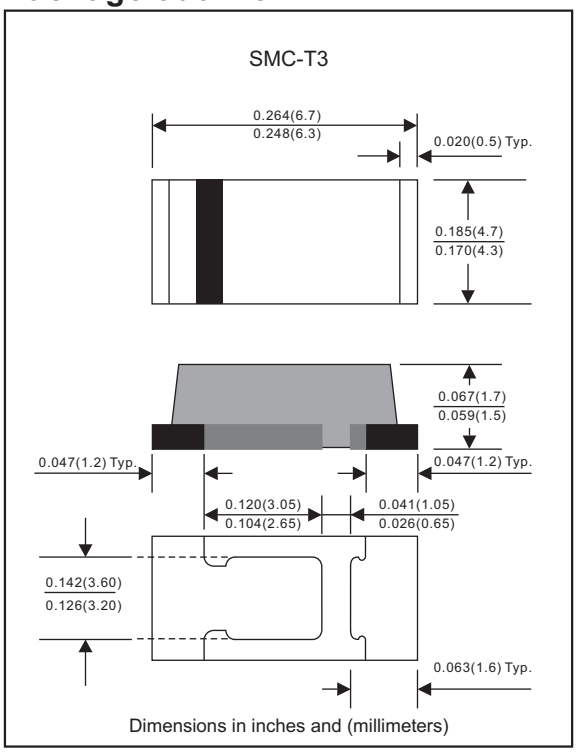
CRFM154-T3

6000mW Surface Mount Current Regulative Diodes-150mA

Features

- Low start-up stabilized current supply voltage.
- High dynamic impedance.
- Constant-current range: 150mA
- Be paralleled for current extension.
- Negative temperature coefficient for LED protection under high temperature.
- Suffix "-H" indicates Halogen-free part, ex.CRFM154-T3-H.

Package outline



Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, DO-214AB / SMC-T3
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.1443gram

Maximum ratings (at T_A=25°C unless otherwise noted)

PARAMETER	Symbol	MIN.	TYP.	MAX.	UNIT
Rating power Note 1	P_D			6000	mW
Rating voltage (Pulse wave) Note 2	V_{WM}			50	V
Pinch-off current	I_P			150	mA
Operating junction temperature range	T_J	-30		+125	°C
Storage temperature range	T_{STG}	-30		+125	°C

Note 1 : Using Al @2500mm^2,thickness 1.5mm,in still air
2 : Pulse wave width 300us

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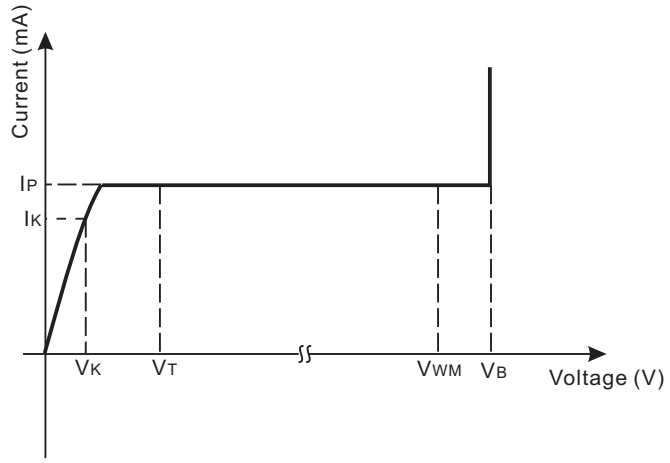
Electrical characteristics (at T_A=25°C unless otherwise noted)

Part No.	Pinch - off current*1				Limiting current*2		Limiting currentratio Ip 40V/Ip 15V	Temperature*3 Coefficient (mA/°C)	Maximum Rating Voltage (DC Vmax)
	Test voltage (V)	Ip(mA) Typical	Min.	Max.	V_K (V)	I_K (mA)			
CRFM154-T3	15	150.0	135.0	165.0	7.0	0.8 Ipmin	*1.0max	*-0.35 max	40

Note : *1 Ip is measured after applying the test voltage for 400 secs duration
*2 Pinch-off current limiting current are by impulse wave at 25°C
*3 Temperature coefficient is measured between 25°C and 50°C

Basic Characteristics



IK: 0.8IP
IP: Pinch-off current
VK: Voltage which produces 0.8IP or greater current
VT: Test voltage
VB: Breakdown voltage
VWM: Maximum Working voltage

Rating and characteristic curves (CRFM154-T3)

FIG.1 Power Derating

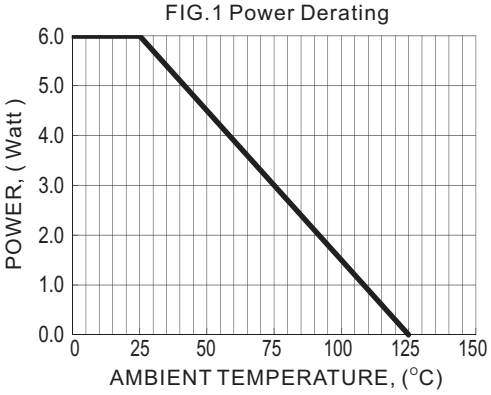
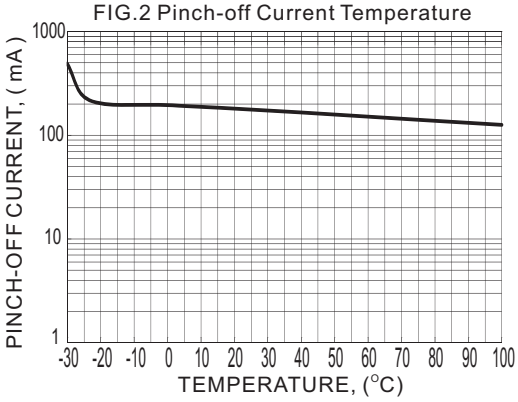


FIG.2 Pinch-off Current Temperature



Note 1:Pulse wave width 300us

FIG.3

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.

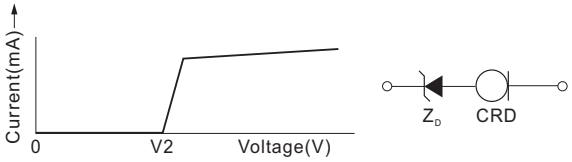
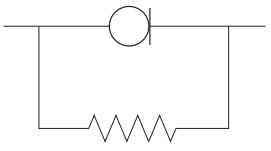


FIG.4

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:

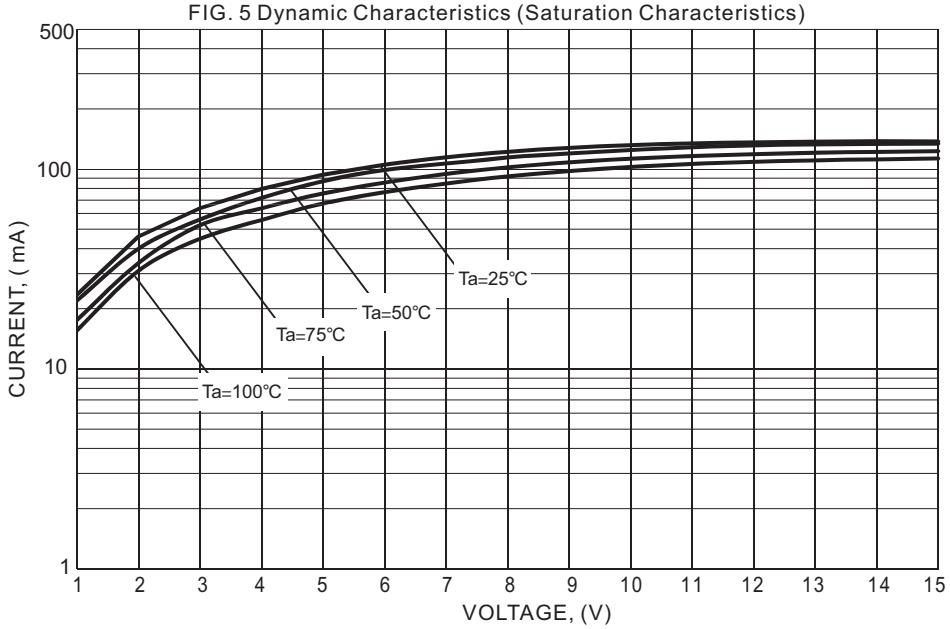
CRFM154-T3 0.5KΩ



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

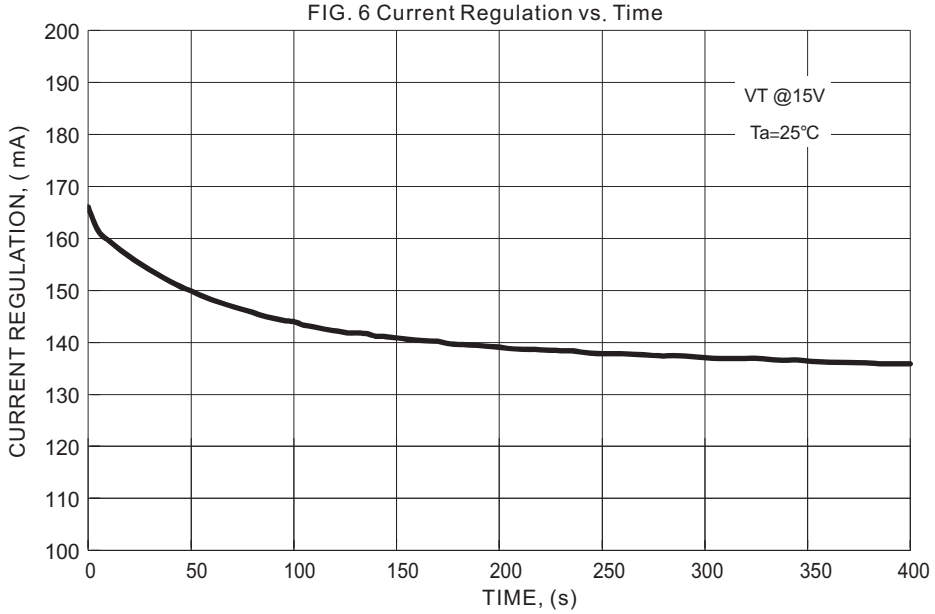
Rating and characteristic curves (CRFM154-T3)

FIG. 5 Dynamic Characteristics (Saturation Characteristics)



Note 1:The test time of each voltage is 10 seconds
2:Using Al @900mm^2,thickness 1.5mm,in still air

FIG. 6 Current Regulation vs. Time



Note 1:Using Al @900mm^2,thickness 1.5mm,in still air

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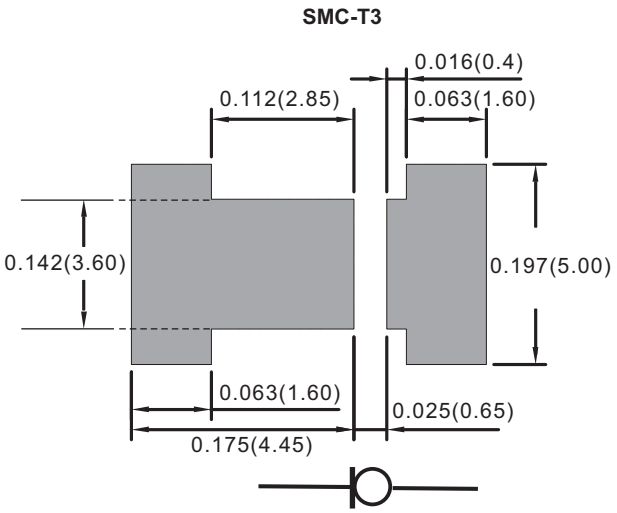
Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Marking

Type number	Marking code
CRFM154-T3	D1

Suggested solder pad layout



Dimensions in inches and (millimeters)

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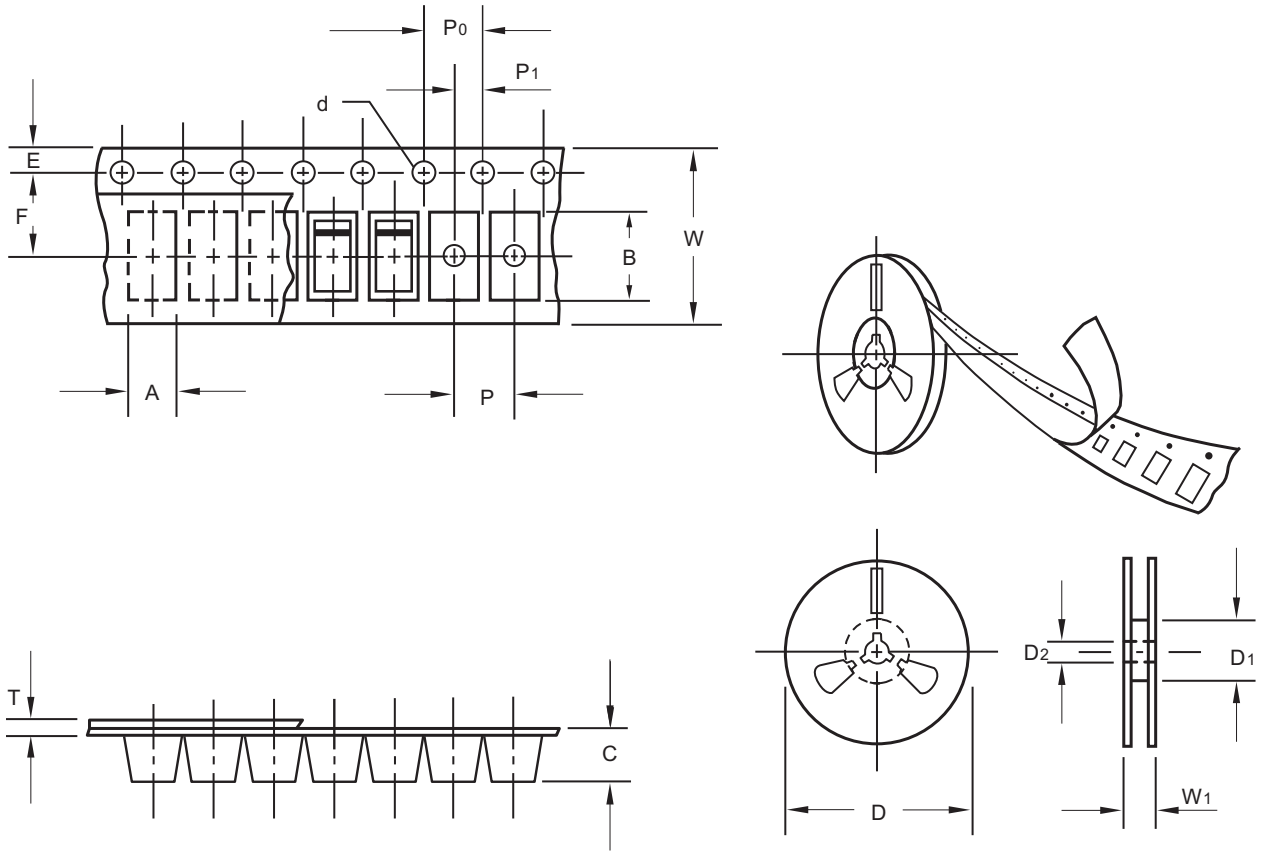
Packing information



unit:mm

Item	Symbol	Tolerance	SMC-T3
Carrier width	A	0.1	4.85
Carrier length	B	0.1	6.95
Carrier depth	C	0.1	1.85
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	330.00
13" Reel inner diameter	D_1	min	50.00
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D_1	min	62.00
Feed hole diameter	D_2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	5.50
Punch hole pitch	P	0.1	8.00
Sprocket hole pitch	P_0	0.1	4.00
Embossment center	P_1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	12.00
Reel width	W_1	1.0	18.00

Note:Devices are packed in accor dance with EIA standar RS-481-A and specifications listed above.

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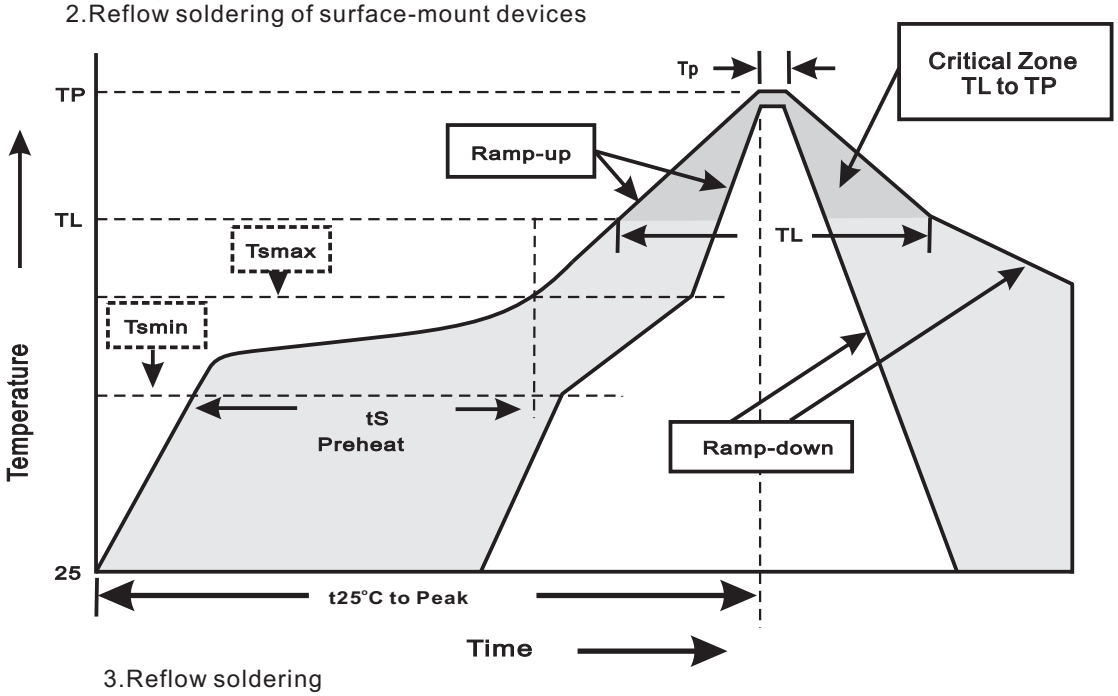
Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
SMC-T3	13"	3,000	8.0	6,000	337*337*37	330	350*330*360	48,000	15.5

Suggested thermal profiles for soldering processes

1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T_L to T_P)	<3°C/sec
Preheat -Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	 150°C 200°C 60~120sec
Tsmax to T_L -Ramp-upRate	 <3°C/sec
Time maintained above: -Temperature(T_L) -Time(t_L)	 217°C 60~260sec
Peak Temperature(T_P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t_P)	10~30sec
Ramp-down Rate	<3°C/sec
Time 25°C to Peak Temperature	<6minutes