

### Type 3560 Series

**Key Features** 

6W@70°C in 4527 size package

Suitable for auto placement

Available from distribution

Terminal finish matte sn over ni barrier



TE Connectivity is pleased to introduce this thick film high power device, sister to our popular 3522 series, suitable for auto placement in volume and for most applications. Supplied as standard on 7 inch Reels of 1000 pieces per reel.

### **Characteristics – Electrical**

Power Rating @ 70°C	6W		
Resistance Range	1Ω ~ 10ΜΩ		
Resistance Tolerance	±1%, ±5%		
Temperature Coefficient of Resistance	1Ω~10Ω ≤± 200PPM/°C		
(TCR)	10.1Ω~10MΩ ≤± 100PPM/°C		
Max. Working Voltage	300V		
Max. Overload Voltage	600V		
Dielectric Withstanding Voltage	600V		
Operating Temperature Range	-55°C <b>~</b> 155°C		

Resistors shall have a rated direct-current (DC) continuous working voltage or a approximate sine-wave root-mean-square (RMS) alternating-current (AC) continuous working voltage at commercial line frequency and waveform corresponding to the power rating, as determined from the following formula:

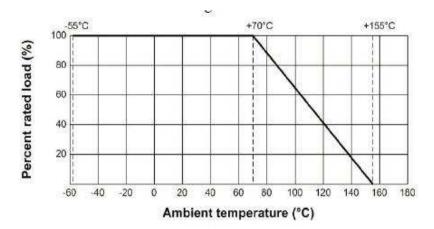
 $RCWV = VP \times R$ 

Where the calculated RCWV is greater than the stated Max. Working Voltage, the Max. Working Voltage will apply.

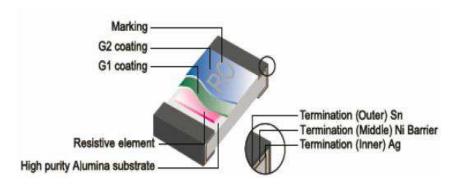


# **Power Rating and Derating**

Resistors shall have a power rating based on continuous load operation at an ambient temperature of 70  $^{\circ}\text{C}$  . For temperature in excess of 70  $^{\circ}\text{C}$  , The load shall derate as shown in chart below.



### **Construction and Dimensions:**





Tuno		Di	imensions (mm	1)	
Туре	L	W	Н	<b>£</b> 1	€2
3560	11.6 ± 0.30	6.85 ± 0.25	1.10 ± 0.10	1.00 ± 0.20	2.50 ± 0.20



# **Performance Specification**

Characteristics	Limits	Test Methods		
		( JIS C 5201-1 )		
Dielectric Withstanding	No evidence of flashover,	4.7 Clamped in the trough of a		
Voltage	mechanical damage, arcing	90°C metallic v-block and shall be		
	or insulation break down	tested at ac potential		
		respectively specified in the type		
		for 60-70 seconds		
Temperature	1Ω~10Ω ≤± 200PPM/°C	4.8 Natural resistance change per		
Coefficient	10.1Ω~10MΩ ≤± 100PPM/°C	temp. degree centigrade.		
		R2-R1 x 106 (PPM/°C)		
		R1(t2-t1)		
		R1: Resistance value at room		
		temperature (T1)		
		R2: Resistance value at room		
		temp. plus 100 °C(T2)		
		Test pattern: room temp. (T1),		
		room temp. +100°C(T2)		
Short Time Overload	Resistance change rate is:	4.13 Permanent resistance		
	± 5% (2.0% + 0.1Ω) Max.	change after the application of a		
	$\pm 1\%$ (1.0% + 0.1 $\Omega$ ) Max.	potential of 2.5 times RCWV for 5		
		seconds		
Solderability	95 % coverage Min.	Wave Solder:		
		Test temperature of solder:		
		245°C ±3°C dipping time in solder		
		: 2-3 seconds.		
		Reflow		
		PEAK VALUE TEMPERATURE:		
		250 230°C		
		200 180°C		
		150 150°C 90±30s		
		100		
		50 20±10s		
		HOT UP TIME SOLDER TIME		
Soldering heat	Resistance change rate is:	4.18 Dip the resistor into a solde		
	± (1.0%+0.05Ω) Max.	bath having a temperature of		
		260°C±3°C and hold it for 10±1		
		seconds.		
Temperature Cycling	Resistance change rate is:	4.19 Resistance change after		
	± 5% (1.0% + 0.1Ω) Max.	continuous 5 cycles for duty cycle		
	± 1% (0.5% + 0.1Ω) Max.	specified below:		
		Step Temp. Time		
		1 -55°C ± 3°C 30m		
		2 Room temp. 10~15m		
		3 +155°C ± 2°C 30m		
		4 Room temp. 10~15m		
Humidity	Resistance change rate is:	4.24 Temporary resistance		
	± 5% (3.0% + 0.1Ω) Max.	change after 240 hours exposure		
	± 1% (0.5% + 0.1Ω) Max.	in a humidity test chamber		
	,	controlled at 40±2°C and 90-95%		
		relative humidity		
	I .			



## **Performance Specification (Cont.)**

Characteristics	Limits	Test Methods
		( JIS C 5201-1 )
Load life in humidity	Resistance change rate is:	7.9 Resistance change after 1,000
	± 5% (3.0% + 0.1Ω) Max.	hours (1.5 hours "on", 0.5 hour
	± 1% (1.0% + 0.1Ω) Max.	"off" ) at RCWV in a humidity
		chamber controlled at 40°C ± 2°C
		and 90 to 95 % relative humidity
Load Life	Resistance change rate is:	4.25.1 Permanent resistance
	± 5% (3.0% + 0.1Ω) Max.	change after 1,000 hours
	± 1% (1.0% + 0.1Ω) Max.	operating at RCWV, with duty
		cycle of (1.5 hours "on", 0.5 hour
		"off") at 70°C ± 2°C ambient
Terminal bending	Resistance change rate is:	4.33 Twist of Test Board:
	$\pm$ (1.0% + 0.05Ω) Max.	Y/X = 3/90 mm for 60 seconds

### Marking

A. 4 digit marking for E-96 series:

\*The first 3 digits are significant figures of resistance and the 4th digit denoted number of zeros.

Ex. **1273** 127ΚΩ

\*For ohmic values below 100  $\Omega$ , letter "R" is for decimal point.

Ex. **49R9** 49.9Ω

B. 3 digit marking for E-24 series:

\*The first 2 digits are significant figures of resistance and the 3rd digit denoted number of zeros

Ex. **124** 120KΩ

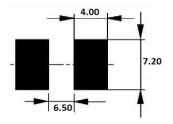
\*For ohmic values below 10  $\Omega$ , letter "R" is for decimal point

Ex. 4.7Ω

# **Soldering**

PCB Plan (mm)

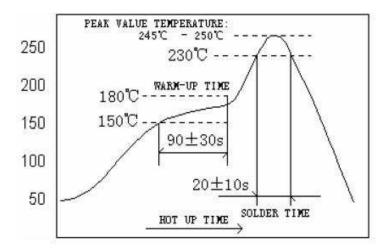
- 4 layers PCB specification:
- 1) Outside 2 layers (Top and Bottom) with copper foil thickness at 2oz.
- 2) Inside 2 layers (Middle layers) with copper foil thickness at 4 oz.





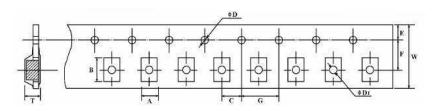
# **Soldering**

Reflow solder profile



# **Packaging**

### **Tape and Reel**

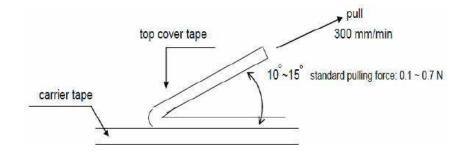


### (mm)

A ±0.1	B ±0.1	C±0.15	ØD+0.1	E±0.1	F±0.15	G ±0.1	W ±0.3	ØD1	T ± 0.1
			-0					±0.1	
7.20	11.9	2.0	1.5	1.75	11.5	4.0	24	-	1.35

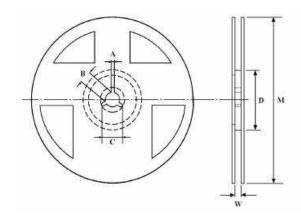
### **Peeling Strength of Top Cover Tape**

Test Condition: 0.1 to 0.7 N at a peel-off speed of 300 mm / min.





#### **Reel Dimensions**



Ī	Qty Reel	A±0.5	B±0.5	C±0.5	D±1	M±2	W±1
I	1000	2.0	13.0	21	60.0	178	25.5

#### **Environment Related Substance**

This product complies to EU RoHS directive, EU PAHs directive, EU PFOS directive and Halogen free.

### **Storage Condition**

The performance of these products, including the solderability, is guaranteed for a year from the date of arrival at your company, provided that they remain packed as they were when delivered and stored at a temperature of  $25^{\circ}\text{C} \pm 10^{\circ}\text{C}$  and a relative humidity of  $60\%\text{RH} \pm 10\%\text{RH}$ , chemical and dust free atmosphere.

Even within the above guarantee periods, do not store these products in the following conditions:

1. In salty air or in air with a high concentration of corrosive gas, such as Cl2, H2S, NH3, SO2, or NO2  $\,$ 

2. In direct sunlight

#### **How To Order**

3560	1R0	F	Т
Common Part	Resistance Value	Tolerance	Pack Style
3560 – 5W 4527 Resistor	1Ω - 1R0 100Ω - 100R 1KΩ - 1K0	F – 1% J – 5%	T- 1000 per reel

# **Mouser Electronics**

**Authorized Distributor** 

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

TE Connectivity: 3560130KFT