

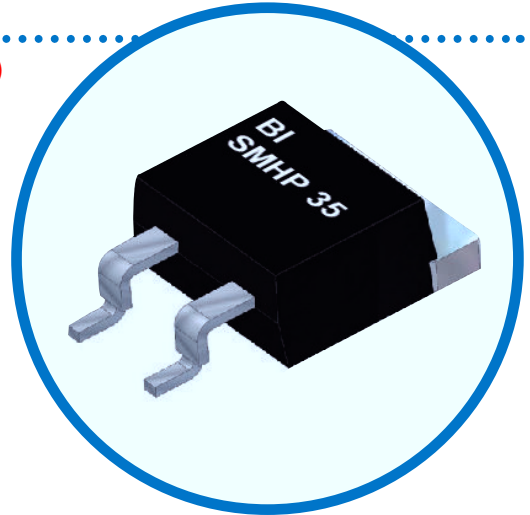
MODEL SMHP 35

OBSOLETE

SMHP 35 Series

(Combined BI & IRC Datasheets)

- 35W High Power Resistors
- TO-263 Surface Mount
- RoHS Compliant.
- Non-Inductive, Small, 35 watt high power resistor.
- TO-263 surface mount package offering a very low thermal resistance.
- Small thin package for high density PCB installation.
- Fully RoHS reflow profile compliant.
- High frequency emitter resistors in switching power supplies.
- High precision CRT colour video amplifiers.
- High frequency snubber and pulse handling circuits.
- Pulse generator load resistors.
- In-rush current protection.
- Bleeder Resistors.



Electrical

ITEMS	SPECIFICATION			TEST CONDITIONS
Power Rating	35 watt			-55°C to +25°C Flange Temperature
	2 watt			Without Heatsink
Thermal Resistance	3.3°C/W			Resistor Hotspot to Flange
Resistance Range	0.01 - 0.09Ω	0.1 - 9.1Ω	10 - 51KΩ	
Nominal Resistance Series	E6	E24	E24	Including 2.5Ω and 5.0Ω
TCR (ppm/°C)	250	100	50	For -55°C to +155°C
Tolerance	±5%	±1% & ±5%	±1%	
Operation Temperature Range	-55°C to +155°C			
Maximum Operating Voltage	500V or \sqrt{PR}			
Dielectric Withstanding Voltage	2000 Vdc			60 Seconds
Load Life	$\Delta R = \pm 1\% + 0.5\Omega$			25°C, 90 min ON, 30 min OFF, 1000 Hours
Humidity	$\Delta R = \pm 1\% + 0.5\Omega$			40°C, 90 - 95%RH, DC 0.1W, 1000 Hours
Temperature Cycle	$\Delta R = \pm 0.25\% + 0.5\Omega$			-55°C, 30 min, +155°C, 30 min, 5 cycles
Soldering Heat (Max.)	$\Delta R = \pm 1\% + 0.5\Omega$			350 ± 5°C, 3 seconds
Solderability	Minimum 90% Coverage			230 ± 5°C, 3 seconds
Insulation Resistance	Over 1,000 MΩ			Between Terminals and Tab
Vibration	$\Delta R = \pm 0.25\% + 0.5\Omega$			

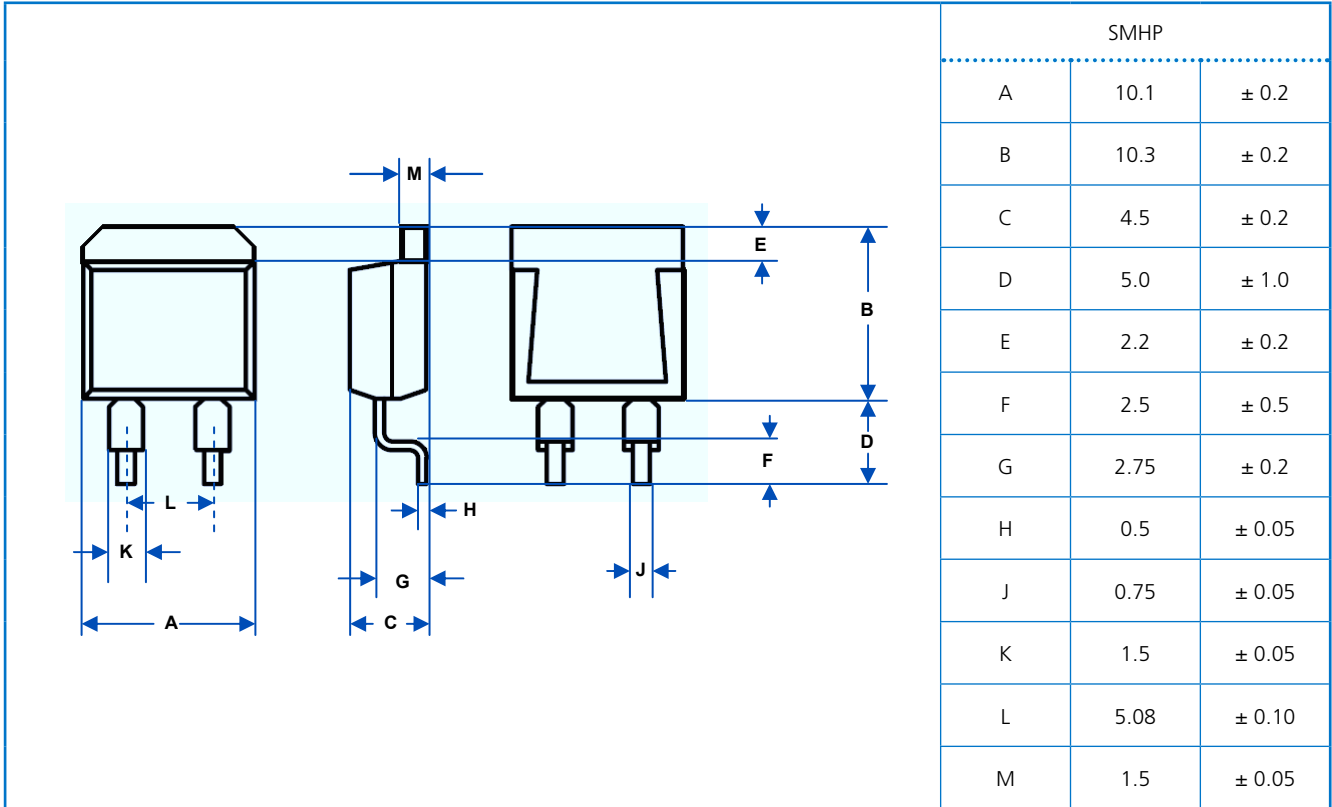
Notes:

1. Electrically isolated metal tab.
2. Contact Factory for custom products, non-standard values and tolerances
3. Current Rating: 25A Maximum.

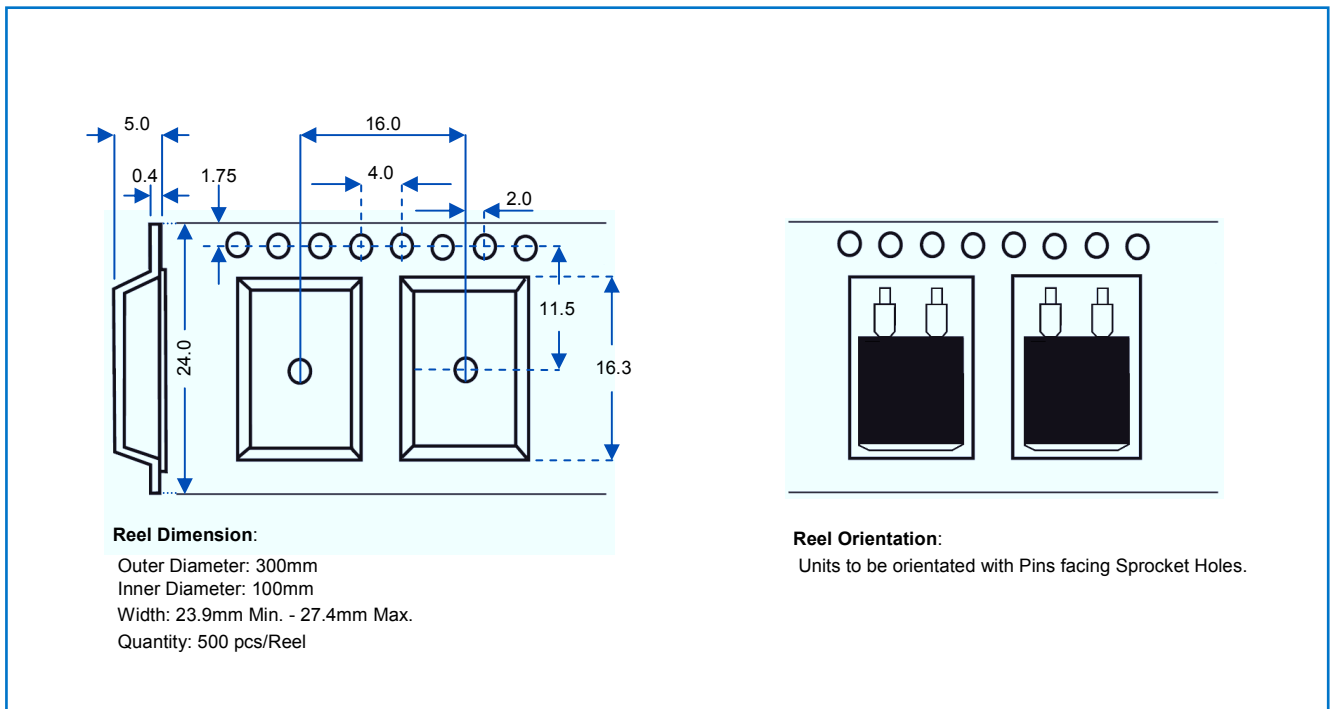
General Note

TT electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT electronics' own data and is considered accurate at time of going to print.

Dimensions (mm)



Tape Dimensions & Orientation

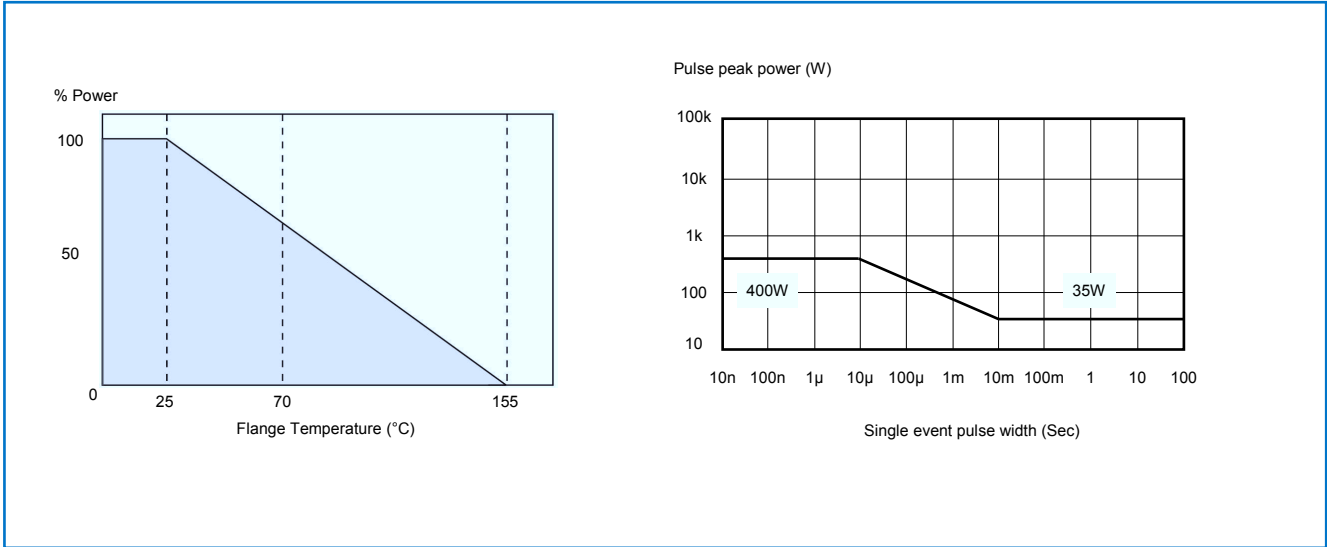


General Note

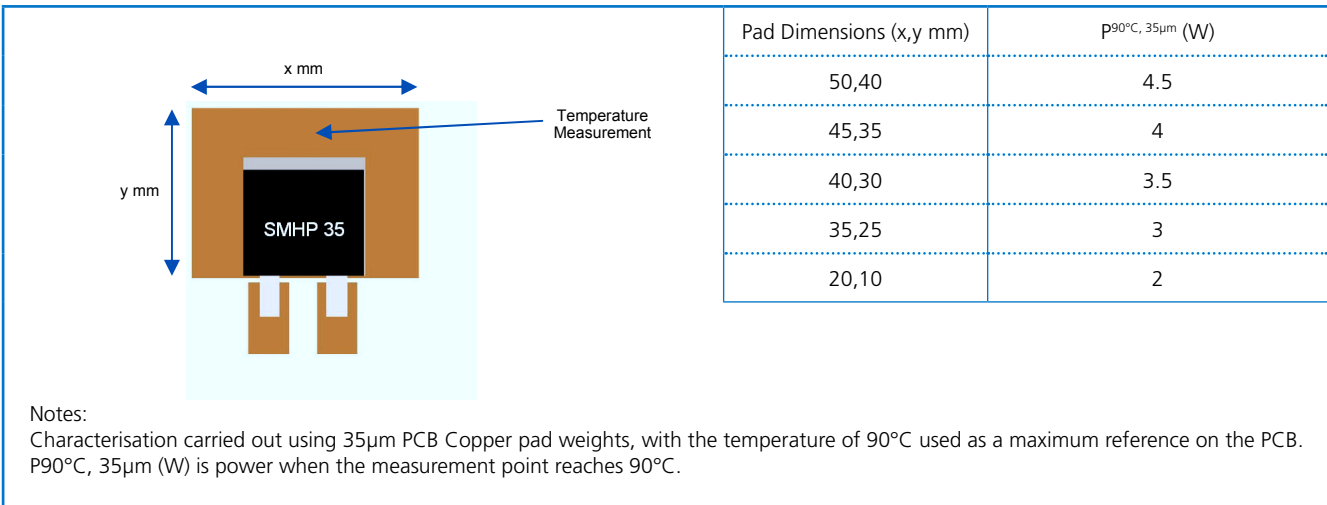
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Derating Curve

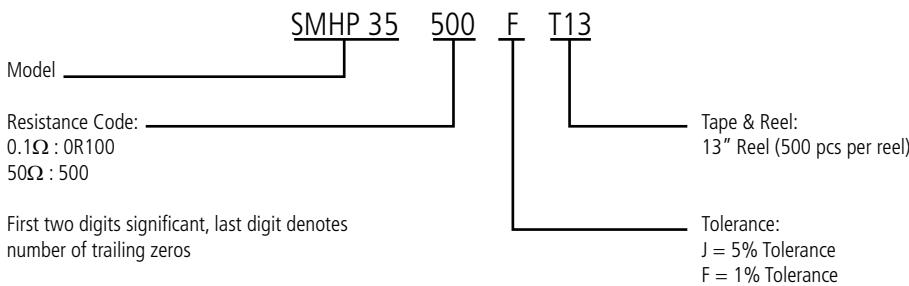
Pulse Energy Durability



FR4 Thermal PCB Characterisation



Ordering Information



General Note

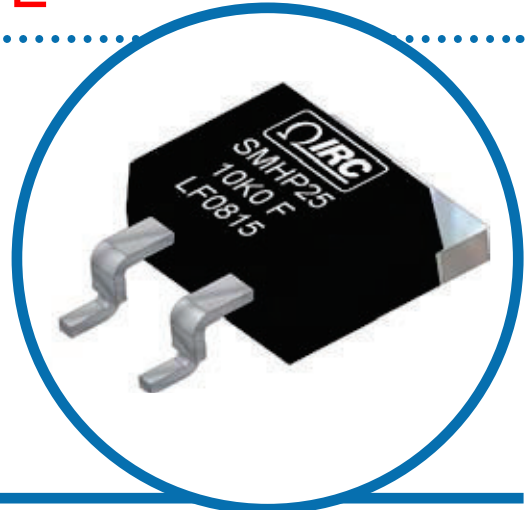
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SMHP35 Series Power Resistor **OBSOLETE**

SMHP35 Series

- TO-263 housing
- 270°C reflow compatible
- Low inductance and capacitance for high frequency circuits
- 35W power rating
- High stability film resistance elements
- RoHS compliant



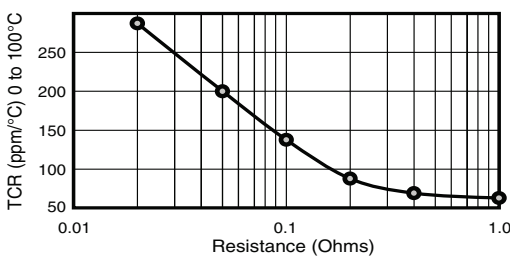
IRC's SMHP series resistors satisfy demanding applications for accurate and stable power resistors housed in the convenient TO-263 case. The resistance element is isolated from the mounting tab by an alumina ceramic layer, providing very low thermal resistance and ensuring high insulation resistance between terminals and metal back plate. The non-inductive design makes these products especially useful in high frequency and high speed pulse applications.

Electrical Data

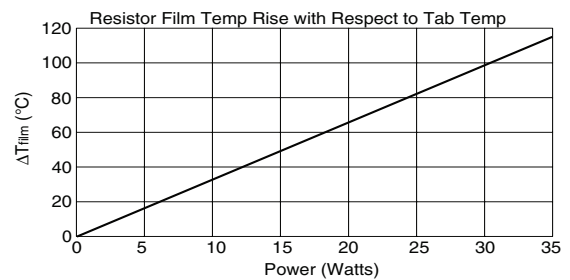
Power Rating ¹		Voltage Rating ⁴	Thermal Resistance	Resistance Range		Tolerances	Nominal Resistance Series ⁵	Typ. TCR (ppm/°C)	Inductance	Capacitance
Heatsink ²	Free Air ³			Min	Max					
35W	2.5W	500 V	3.3°C/W	0.01Ω	0.09Ω	±1%, ±5%	E24 Includes 2.5 & 5.0 multiplier	See Chart	<10nH	<2pF
				0.1Ω	9.1Ω					
				10Ω	51KΩ					

¹Maximum current 25 amps
²Power rating based on 25°C case temperature
³Power rating based on 25°C ambient temperature
⁴Maximum voltage 500V or $\sqrt{P \times R}$
⁵Contact factory for availability of resistance or tolerance values outside this range

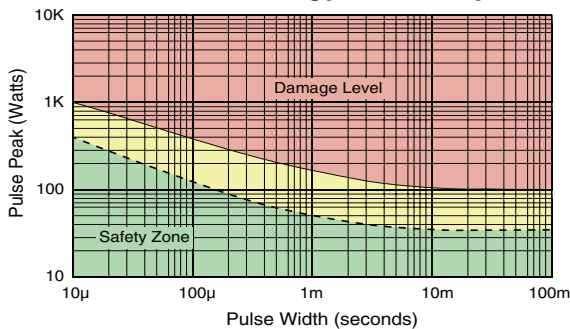
Typical TCR For Low Values



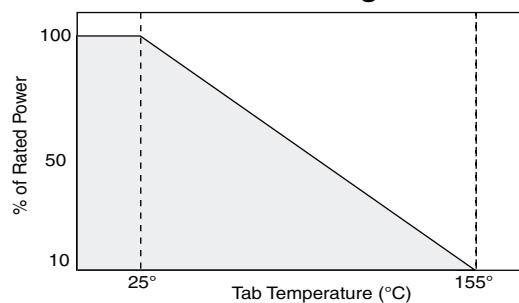
Temperature Rise Data



Pulse Energy Durability



Power Derating Data

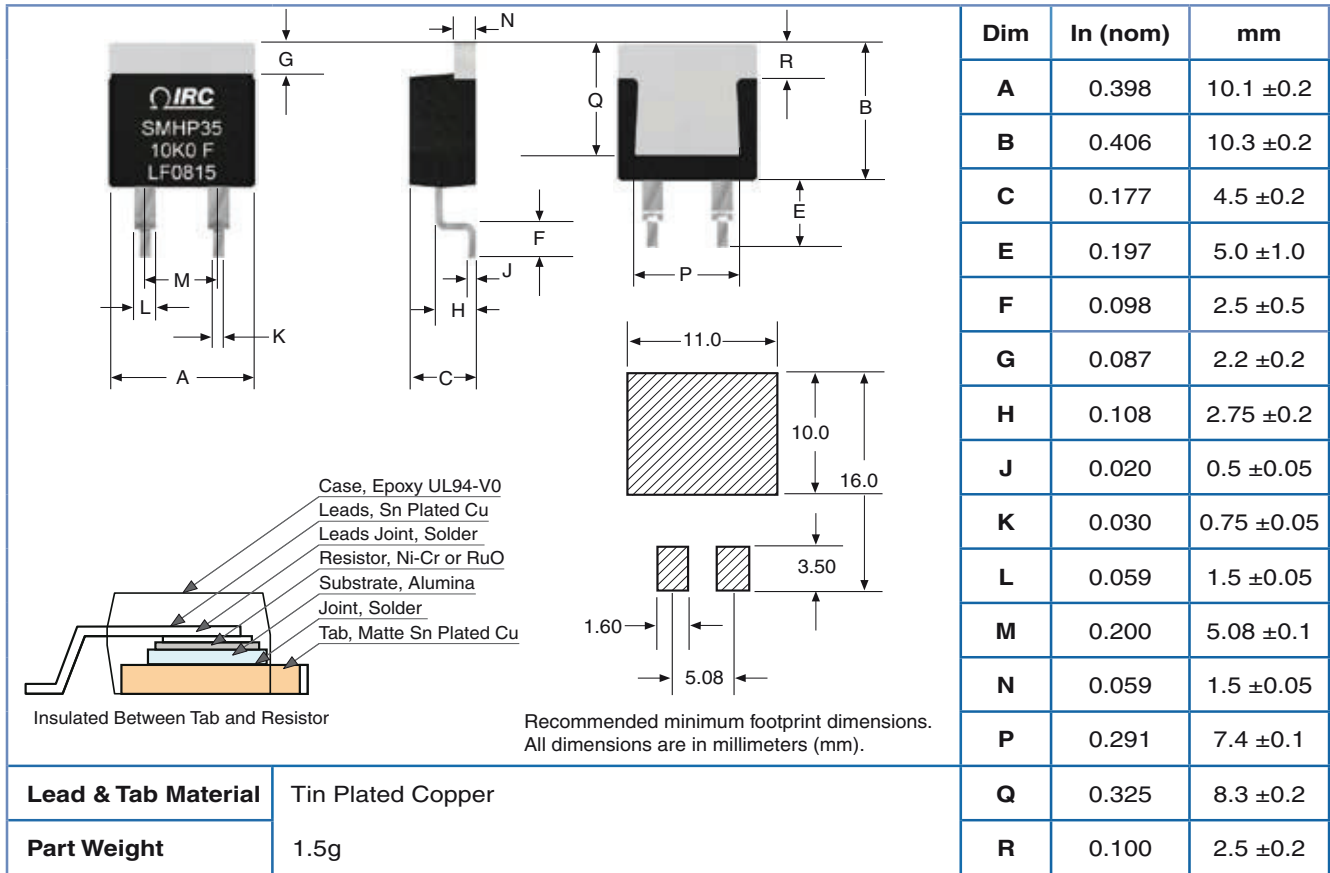


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Physical Data



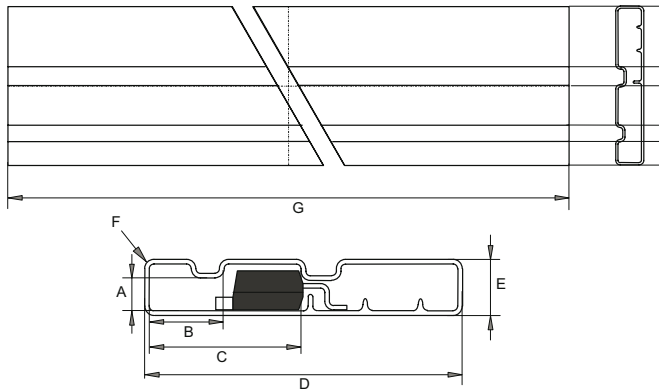
Environmental Data

Test	Method	Specification - Performance
Load Life	1,000 Hours @ 25°C; 90 minutes on, 30 minutes off	±(1.0% + 1mΩ)
Humidity	1000 hours; 40°C, 90-95% RH, 0.1W DC	±(1.0% + 1mΩ)
Temperature Cycle	5 cycles; 30 minutes @ -55°C, 30 minutes at +155°C	±(0.25% + 1mΩ)
Short Time Overload	2X Rated Power, not to exceed 1.5X Rated Voltage for 5 seconds, 25° w/ Heat Sink	±(0.25% + 1mΩ)
Vibration	10 cycles; X, Y, Z axis, amplitude 0.75mm, 100- 2000Hz sweep/min	±(0.25% + 1mΩ)
Insulation Resistance	Between terminals and tab	>1000MΩ
Dielectric Withstanding Voltage	Terminals to tab; 60sec, 1mA	2000 volts AC
Resistance to Solder Heat	350 ± 5°C for 3 seconds	±(0.10% + 1mΩ)
Solderability	230 ± 5°C, 3sec.	>95% coverage
Operating Temperature Range		-55°C to +155°C

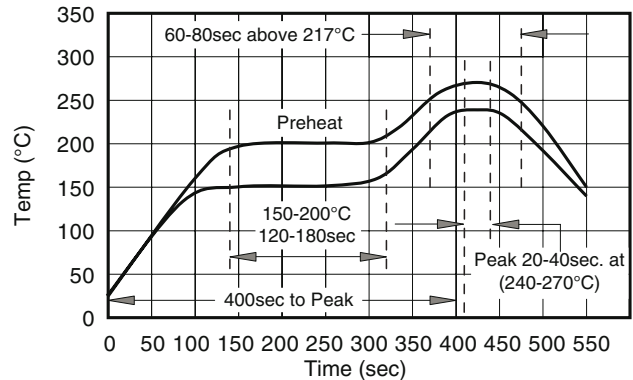
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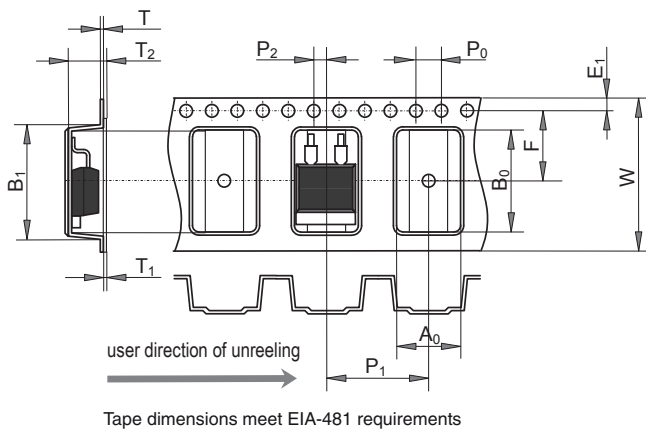
Tube Packaging Data



Solder Reflow Profile



Reel Packaging Data



Tape Dimensions		
Dim	Nom. (mm)	Tol. (mm)
A ₀	10.77	0.1
B ₀	16.33	0.1
B ₁	17.0	0.1
E ₁	1.75	0.1
F	11.5	0.1
P ₀	4.0	0.1
P ₁	16.0	0.1
P ₂	2.0	0.1
T	0.4	0.05
T ₁	0.05	---
T ₂	6.07	0.1
W	24.0	+0.3/-0.1

Tube Dimensions		
Dim	Nom. (mm)	Tol. (mm)
A	3.25	0.15
B	8.0	0.15
C	16.25	0.15
D	34.4	(34.0)
E	6.4	(6.0)
F	R0.7	(R0.5)
G	535.0	1.0

Reel Dimensions	
Outer Diam.	330 mm
Inner Diam.	100 mm
Width	27.4 mm max
Qty.	500pcs/reel

Ordering Data

Prefix **TFP** - **SMHP35LF** - **1R50** - **J** - **L04**

Style
SMHP35LF = 35W, TO-263 style power resistor

Resistance Code
4-digit resistance code.
Ex: 0R05 = 0.05Ω, 10R0 = 10Ω, 1K00 = 1KΩ

Absolute Tolerance Code
J = ±5%; F = ±1%

Packaging Code
L04 = RoHS compliant tube (50 pcs per tube)
L05 = RoHS compliant reel (500 pcs per reel)

For additional information or to discuss your specific requirements, please contact our Applications Team using the contact details below.

Application Notes

- Resistance measurement shall be made at the terminal foot.
- Thermal design should satisfy the following equation: Tab Temperature (T_T) + [Thermal Resistance ($R_{\theta TT}$) x Power applied (Watts)] \leq 155°C over the full operating temperature of the application.
- Resistor film temperature is not to exceed 155°C during operation.
- This product is RoHS compliant by exemption according to RoHS directive 2002/95/EC exemptions 5 & 7, as they apply to lead in glass and internal solder connections.

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