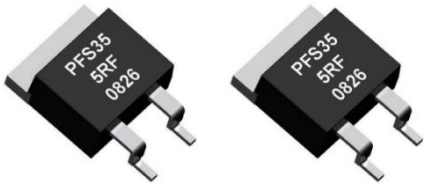
TFS35 Series

TO220 High Power Thick Film SMD Resistors

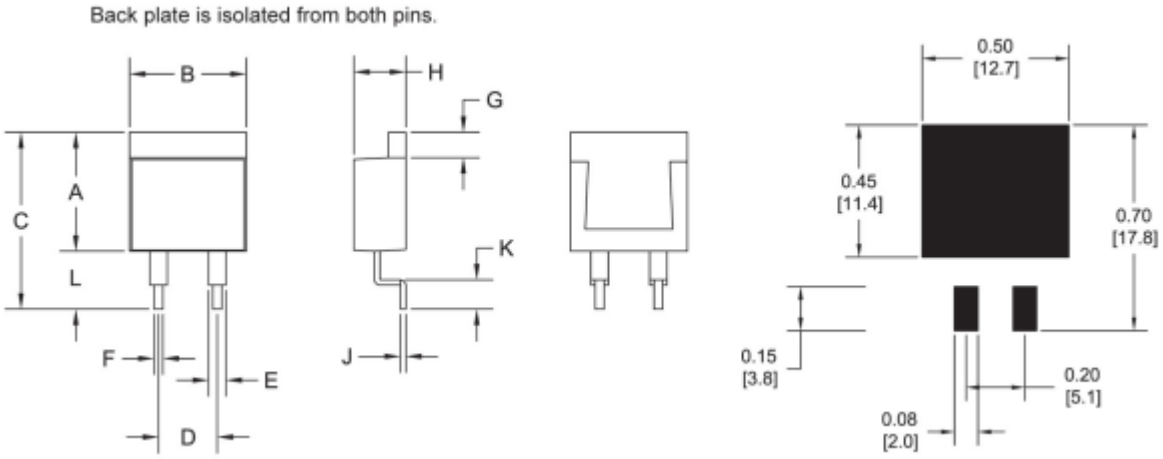


- **D2PAK Housing**
- **Resistances From 0.01Ohm to 500kOhms**
- **35 Watts At 25˚C Case Temperature On Heat Sink**
- **Resistance Tolerances to ±1%**
- **TCR to ±50ppm/°C**
- **Load Stability to 1%**
- **Low Ohm Values For Current Sense Applications**
- **Exceptional Pulse Performance**
- **Solder Reflow Secure At 250°C / 30s**
- **Electrically Isolated From Back Plate**
- **Low Inductance - 0.1μH Maximum**
- **RoHS Compliant**
- **Flammability UL94V-0**

▣ SPECIFICATIONS

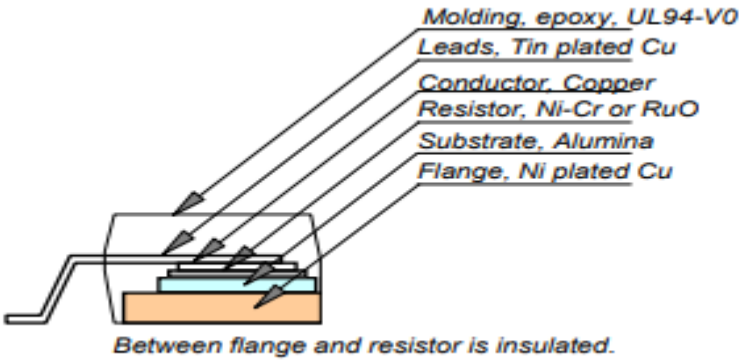
Type	TFS35		
Terminals	2		
Terminal Finish	Tin Plated Copper		
Power Rating (with heat sink)	35 W (2W on Simple solder Pad)		
Thermal Resistance Rthj-c	3.4℃/W		
Resistance Range	0.01 to 0.099Ohms	0.1 to 9.90Ohms	10 to 100KOhms
Tolerances (others upon request)	5%	1% / 5%	1%
Temperature Coefficient	±250 ppm/°C	±100 ppm/°C	±50 ppm/°C
Operating Temperature	-55°C to 175°C		
Max Operating Voltage	500VDC		
Inductance	0.1uH		
Voltage Proof	2.0kVDC		
Insulation Resistance	Over 4,000 Mega ohm		
Dielectric strength	2,000VDC		
Load Life	±1%	90 min ON, 30 min OFF, 1000hrs @ 25°C	
Humidity	±1%	90-95% RH, 0.1W, 1000 hrs @ 40°C	
Temperature Cycle	±0.25%	-55°C for 30 min, +155°C for 30 min, 5cycles	
Solder Heat	±0.1%	350°C ±5°C for 3 seconds	
Vibration	±0.25%	5G 10~2Khz 20min / 12cycles	
Flammability	UL94V-0		
Reflow soldering	250°C / 30s / 3cycles (sufficient cooling bet ween each cycles)		
Moisture Sensitivity Level	MSL-1		
Mass	1.5g		

▣ DIMENSIONS



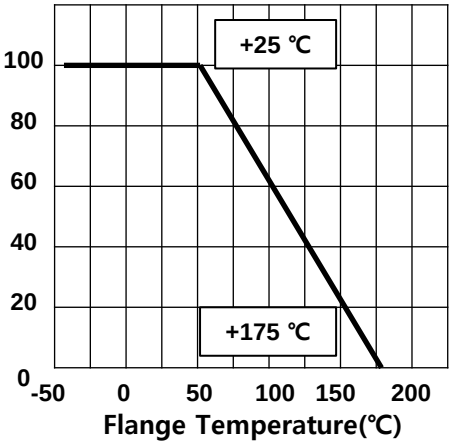
Dimension	mm	Tol (±mm)	inches	Tol (±inches)
A	10.3	0.2	0.405	0.008
B	10.1	0.2	0.400	0.008
C	15.3	1.2	0.602	0.047
D	5.08	0.1	0.200	0.004
E	1.5	0.05	0.060	0.002
F	0.75	0.05	0.030	0.002
G	2.2	0.2	0.087	0.008
H	4.5	0.2	0.177	0.008
J	0.5	0.05	0.020	0.002
K	2.5	0.5	0.10	0.02
L	5.0	1.0	0.20	0.04

Structure and Materials



▣ DERATING CURVES

% Power

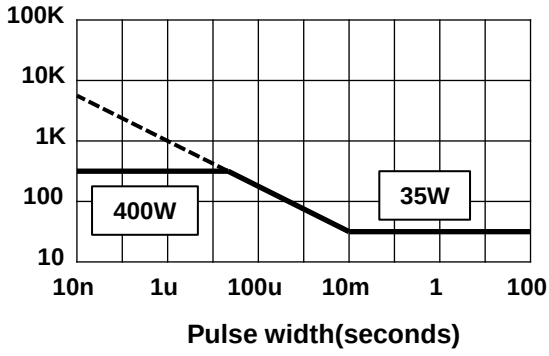


Power Rating Notes-
The TFS35 Series Resistors must be attached to a suitable heatsink.
The maximum internal resistor temperature is 175℃
To specify an appropriate heatsink use the following formula

$$R_{\Theta H} = \frac{T_{MAX} - (P * R_{\Theta R}) - T_A}{P}$$

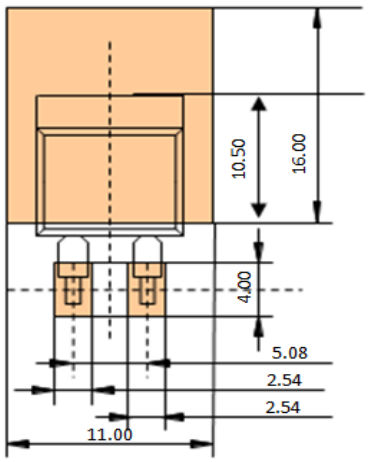
Where: $R_{\Theta H}$ = Thermal Resistance of Heatsink (K/W)
$R_{\Theta R}$ = Thermal Resistance of Resistor (K/W)
T_{MAX} = Maximum Temperature of Resistor
T_A = Ambient Temperature of Heatsink (℃)
P = Power Through Resistor (W)

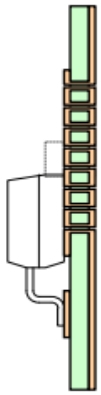
Pulse Peak Power(W)



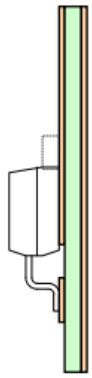
Tenative continuous-pulse allowance at duty 0.01. Load life test will be necessary in actual equipment, because curve may be changed by resistance, repetition, duty and perating temperature

Applications .TFS35



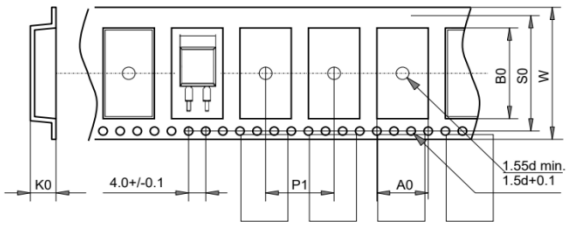


Heat conduction with via hole to back conductor

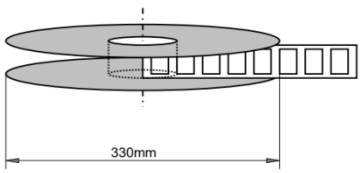


Heat conduction with surface conductor

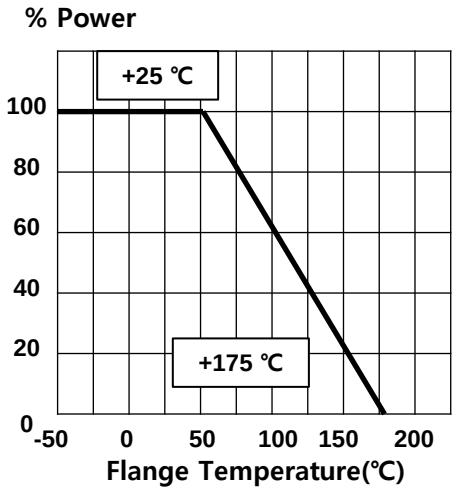
Tape Reel ,TPFS35 (500pcs/reel)



A0	12+/-0.3
B0	16+/-0.3
K0	6.1+/-0.3
P1	16+/-0.3
S0	20+/-0.3
W	24+/-0.3



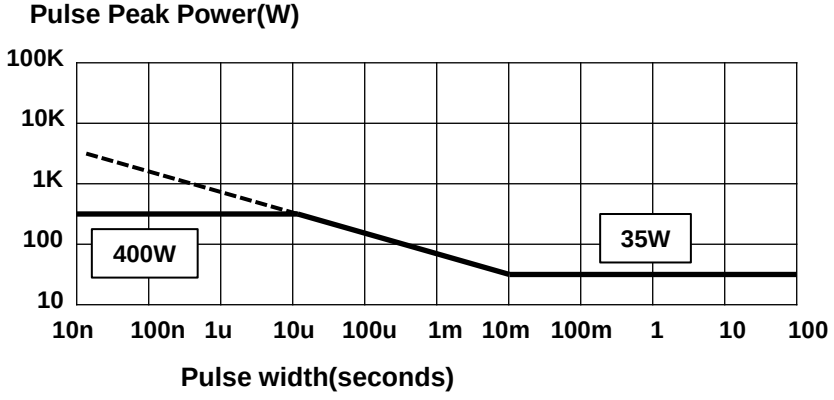
▣ DERATING CURVES



Power Rating Notes-
The TFS35 Series Resistors must be attached to a suitable hearsink.
The maximum internal resistor temperature is 175℃
To specify an appropriate heatsink use the following formula

$$R_{\theta H} = \frac{T_{MAX} - (P * R_{\theta R}) - T_A}{P}$$

Where: $R_{\theta H}$ = Thermal Resistance of Heatsink (K/W)
$R_{\theta R}$ = Thermal Resistance of Resistor (K/W)
T_{MAX} = Maximum Temperature of Resistor
T_A = Ambient Temperature of Heatsink (°C)
P = Power Through Resistor (W)



Tenative continuous-pulse allowance at duty 0.01. Load life test will be necessary in actual equipment, because curve may be changed by resistance, repetition, duty and perating temperature

▣ HOW TO ORDER

TFS35	10KΩ	±1%	NOTE
TYPE	RESISTANCE	TOLERANCE ±1% ±5%	TAPE 500Pcs Packaging