

BYW51/F/G/FP/R-200

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit	
R _{th(j-c)}	Junction to case	TO-220AB / D ² PAK / I ² PAK	Per diode	2.5	°C/W
			Total	1.4	
		ISOWATT220AB	Per diode	5.1	
			Total	4.05	
		TO-220FPAB	Per diode	5.7	
			Total	4.6	
R _{th(c)}	Coupling	TO-220AB / D ² PAK / I ² PAK	0.25	°C/W	
		ISOWATT220AB	3.0		
		TO-220FPAB	3.5		

When diodes 1 and 2 are used simultaneously :

$$\Delta T_c (\text{diode 1}) = P(\text{diode 1}) \times R_{th(j-c)} (\text{Per diode}) + P(\text{diode 2}) \times R_{th(c)}$$

STATIC ELECTRICAL CHARACTERISTICS (Per diode)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I _R *	Reverse leakage current	T _j = 25°C	V _R = V _{RRM}			15	μA
		T _j = 100°C				1	mA
V _F **	Forward voltage drop	T _j = 125°C	I _F = 8 A			0.85	V
		T _j = 125°C	I _F = 16 A			1.05	
		T _j = 25°C	I _F = 16 A			1.15	

Pulse test : * t_p = 5 ms, δ < 2 %

** t_p = 380 μs, δ < 2 %

To evaluate the conduction losses use the following equation :

$$P = 0.65 \times I_{F(AV)} + 0.025 \times I_{F(RMS)}^2$$

RECOVERY CHARACTERISTICS

Symbol	Test Conditions			Typ.	Max.	Unit
trr	T _j = 25°C	I _F = 0.5A I _R = 1A	I _{rr} = 0.25A		25	ns
		I _F = 1A V _R = 30V	dI _F /dt = -50A/μs		35	
tfr	T _j = 25°C	I _F = 1A V _{FR} = 1.1 x V _F max	dI _F /dt = -50A/μs	15		ns
V _{FP}	T _j = 25°C	I _F = 1A	dI _F /dt = -50A/μs	2		V

Fig. 1: Average forward power dissipation versus average forward current (per diode).

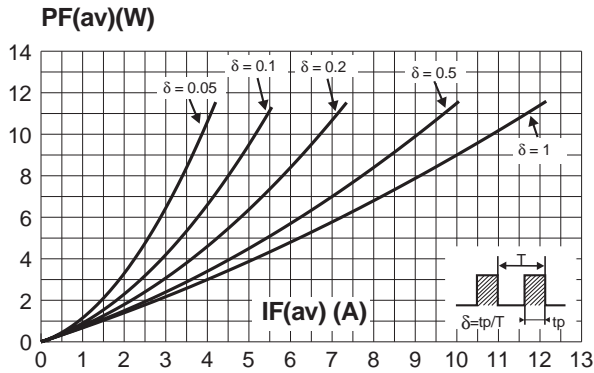


Fig. 2: Peak current versus form factor (per diode).

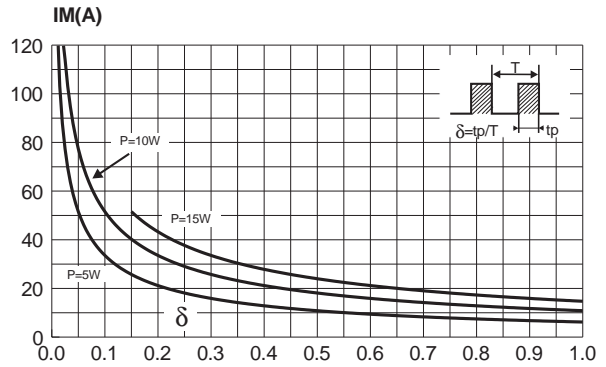


Fig. 3-1: Average forward current versus ambient temperature ($\delta = 0.5$, D²PAK, TO-220AB).

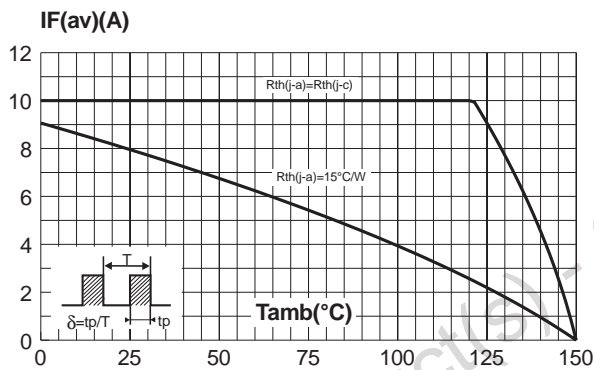


Fig. 3-2: Average forward current versus ambient temperature ($\delta = 0.5$, ISOWATT220AB, TO-220FPAB).

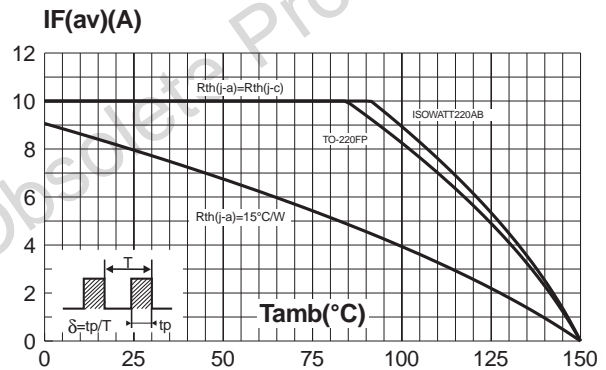


Fig. 4-1: Non repetitive surge peak forward current versus overload duration (D²PAK, TO-220AB).

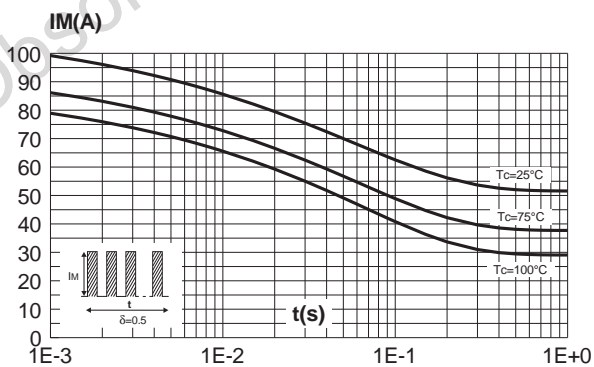


Fig. 4-2: Non repetitive surge peak forward current versus overload duration (ISOWATT220AB).

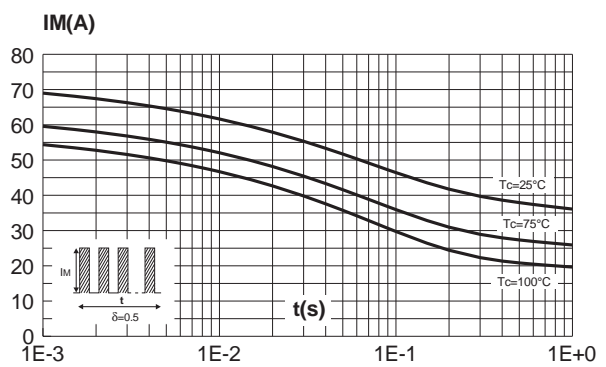


Fig. 4-3: Non repetitive surge peak forward current versus overload duration (TO-220FPAB).

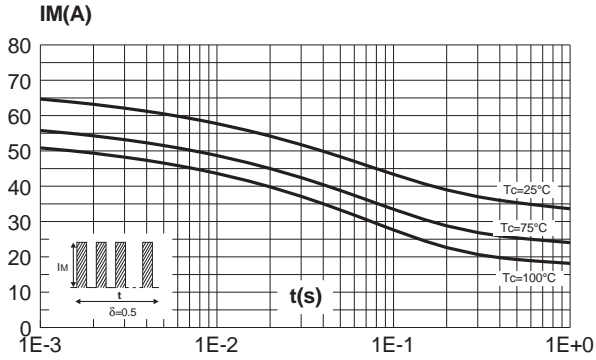


Fig. 5-1: Relative variation of thermal impedance junction to case versus pulse duration (D²PAK, TO-220AB).

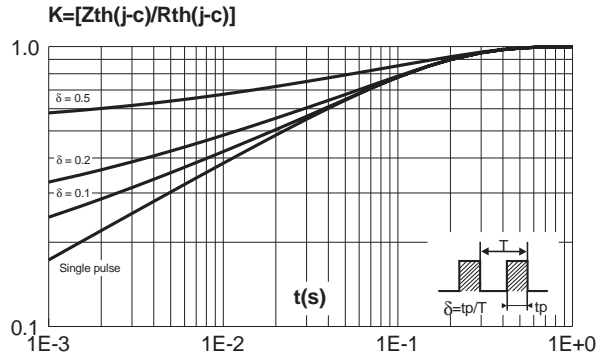


Fig. 5-2: Relative variation of thermal impedance junction to case versus pulse duration (ISOWATT220AB, TO-220FPAB).

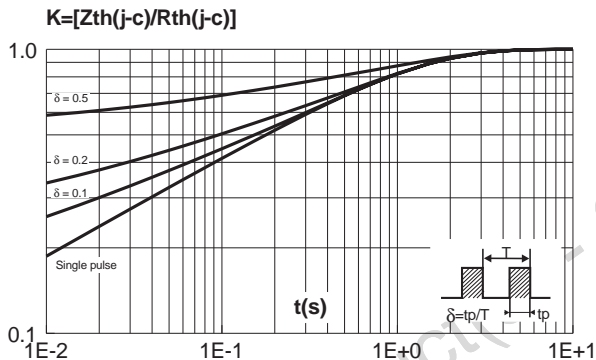


Fig. 6: Forward voltage drop versus forward current (maximum values, per diode).

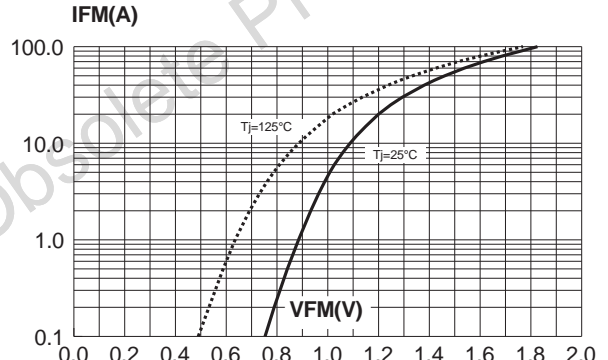


Fig. 7: Junction capacitance versus reverse voltage applied (typical values, per diode).

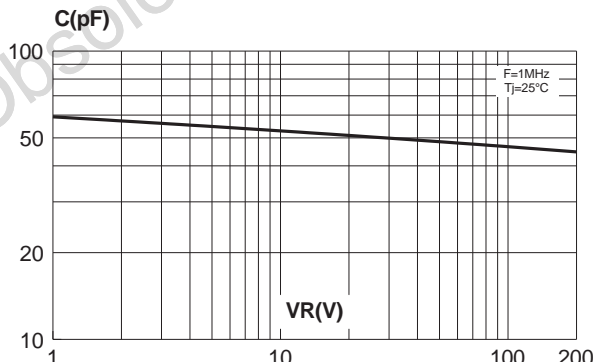


Fig. 8: Reverse recovery charges versus dIF/dt (per diode).

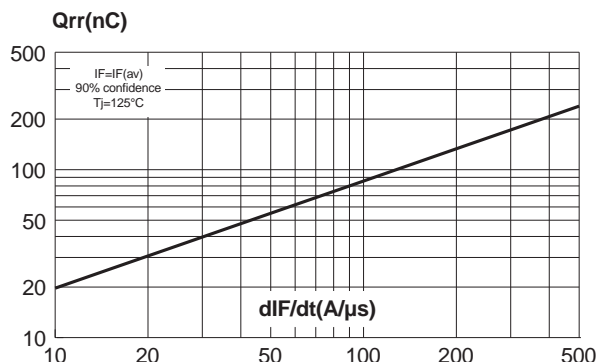


Fig. 9: Peak reverse recovery current versus di_F/dt (per diode).

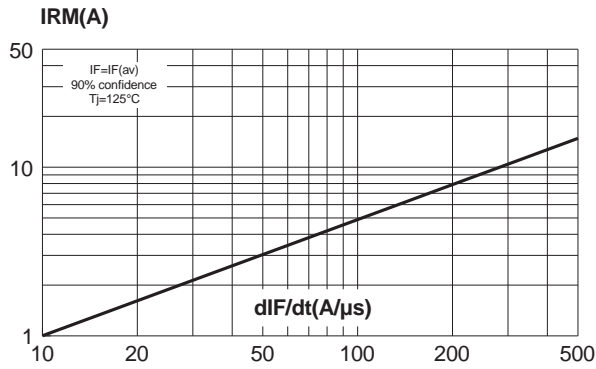


Fig. 10: Dynamic parameters versus junction temperature.

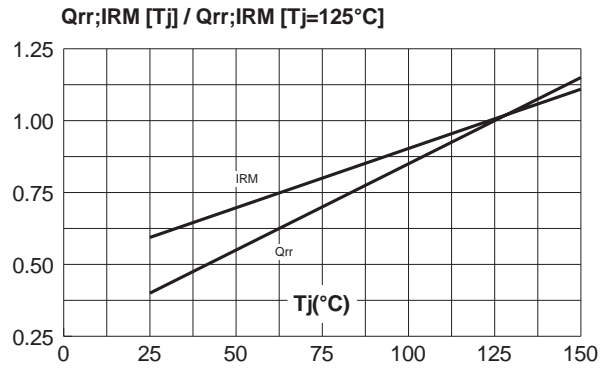
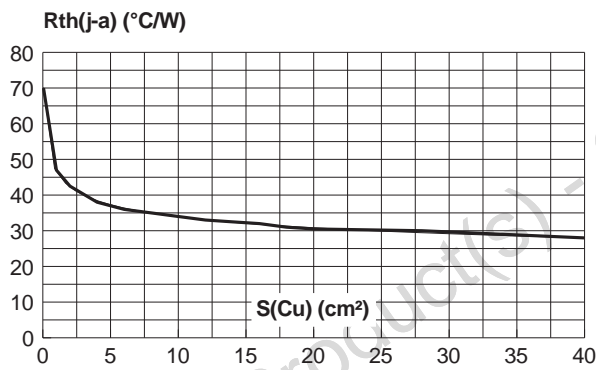
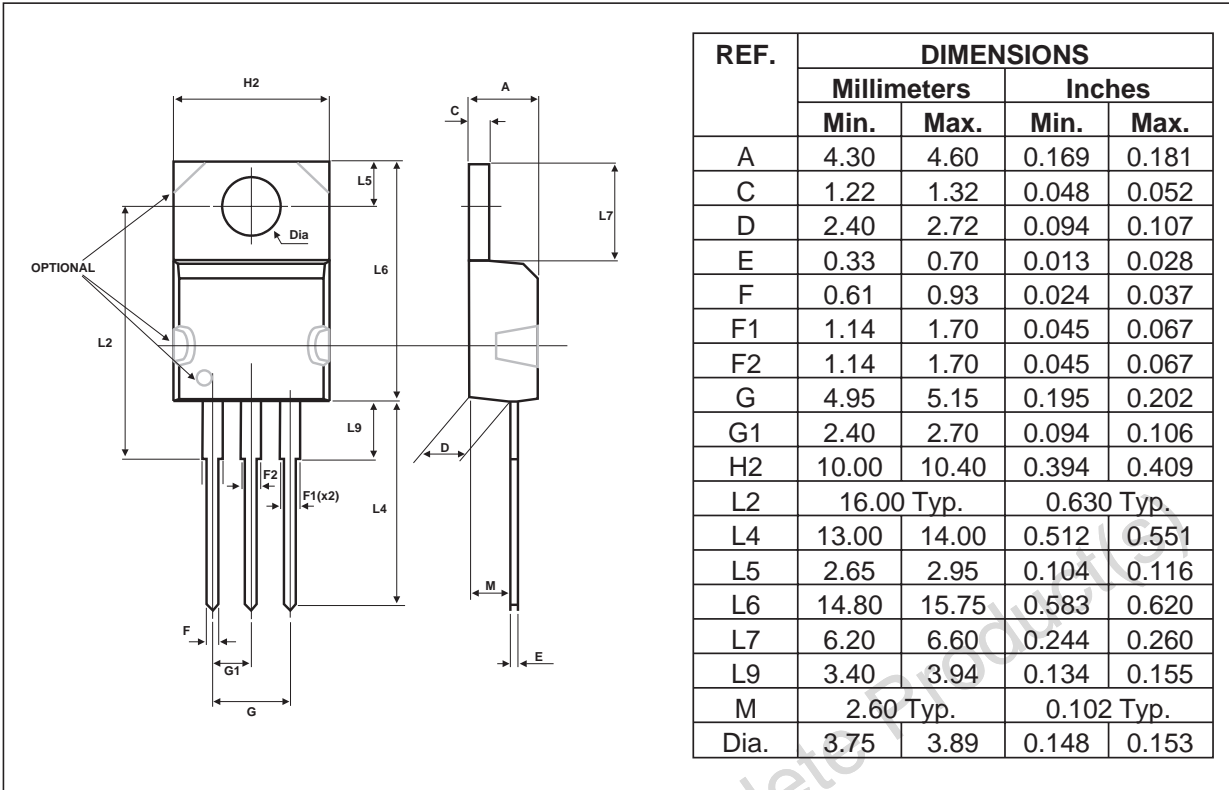


Fig. 11: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35 μ m) (D²PAK).

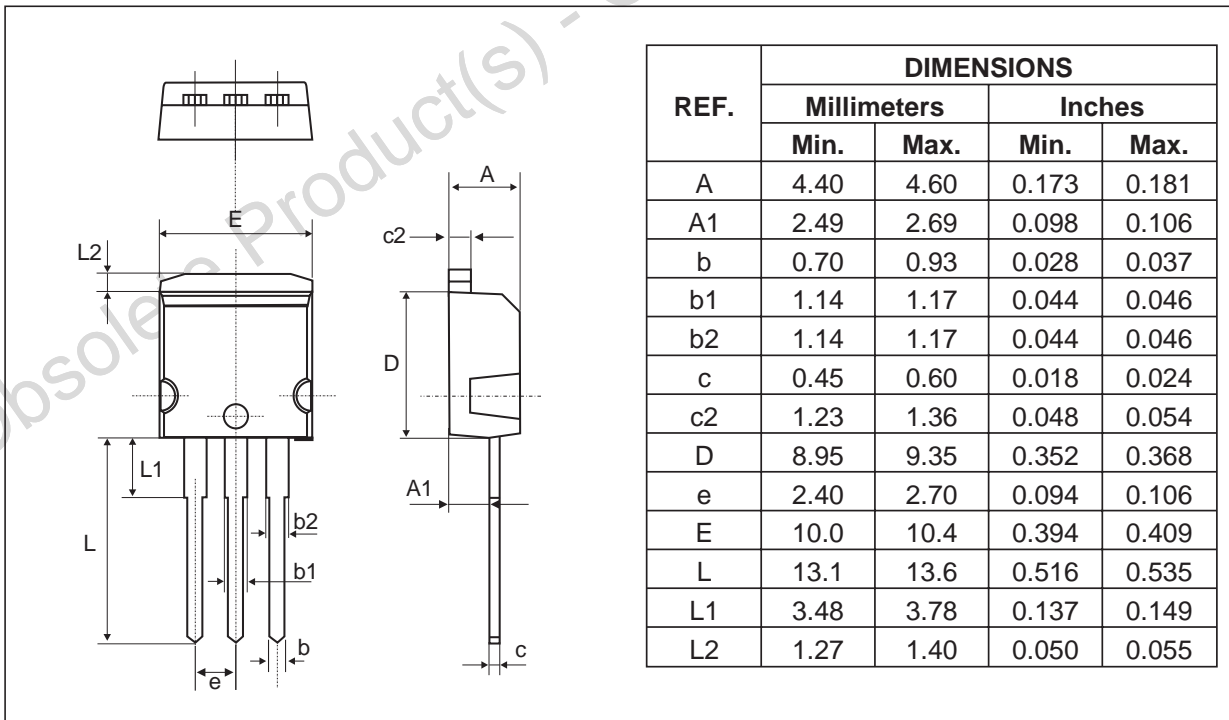


Obsolete Product(s) - Obsolete Product(s)

PACKAGE MECHANICAL DATA
TO-220AB (JEDEC compatible)

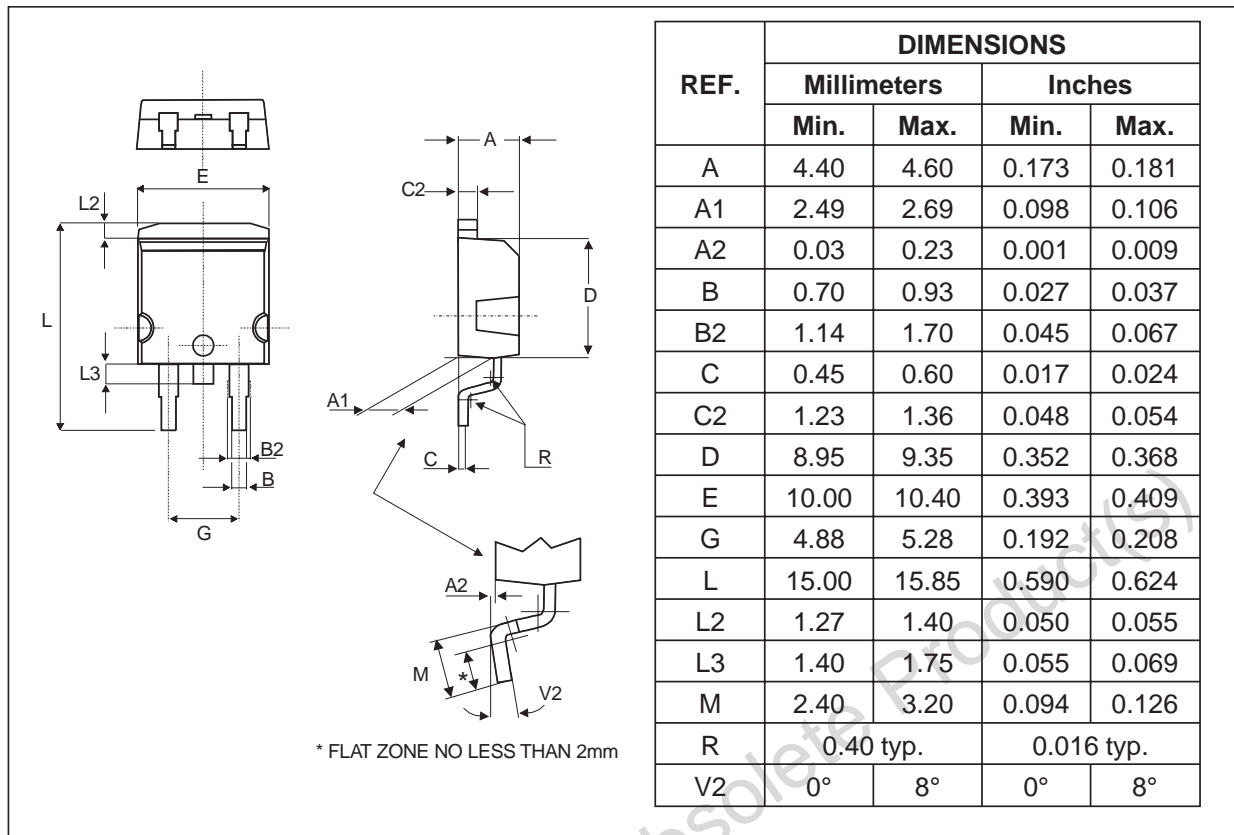


PACKAGE MECHANICAL DATA
I²PAK

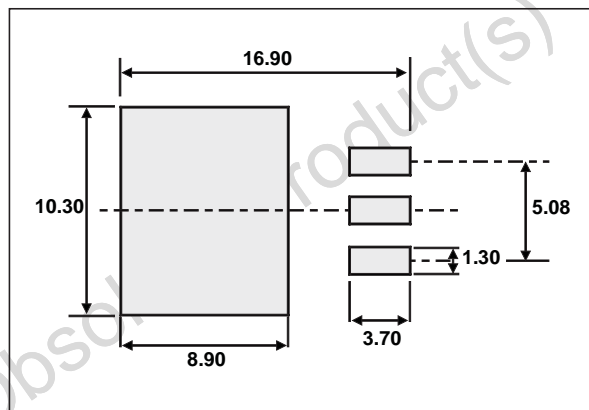


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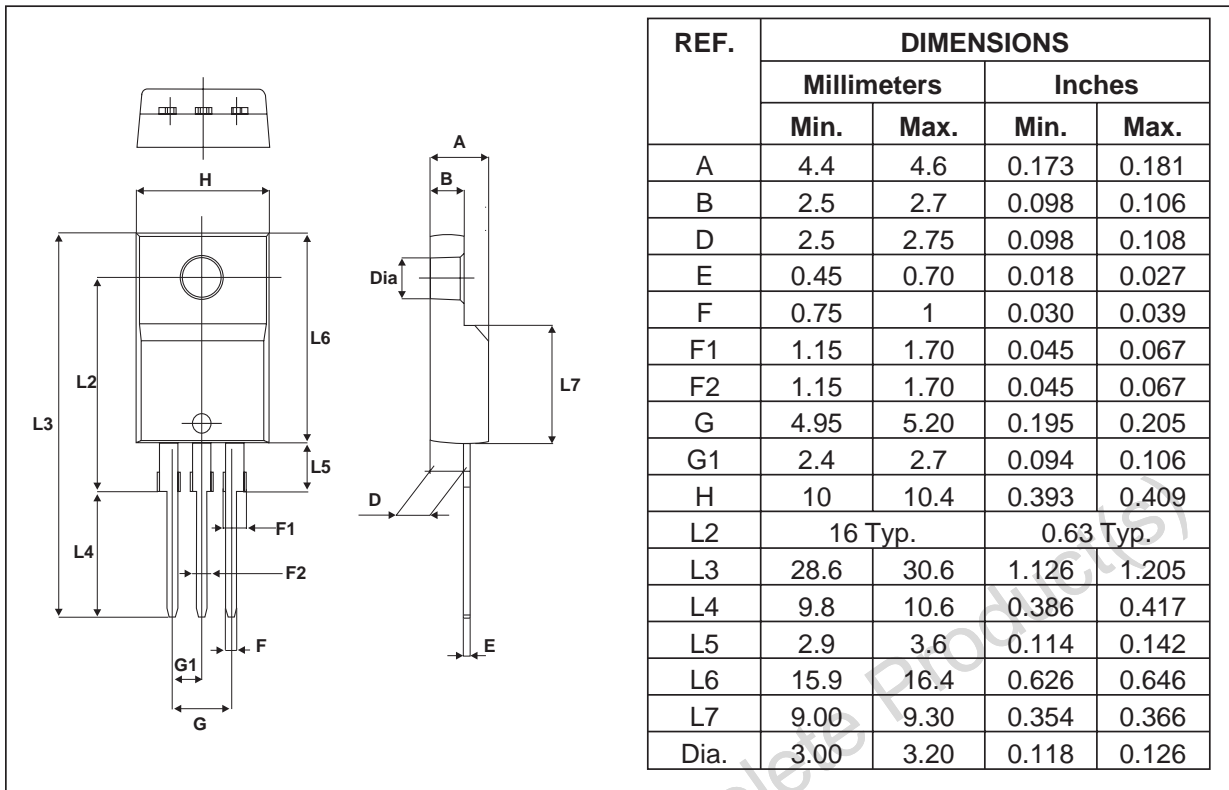
PACKAGE MECHANICAL DATA
D²PAK



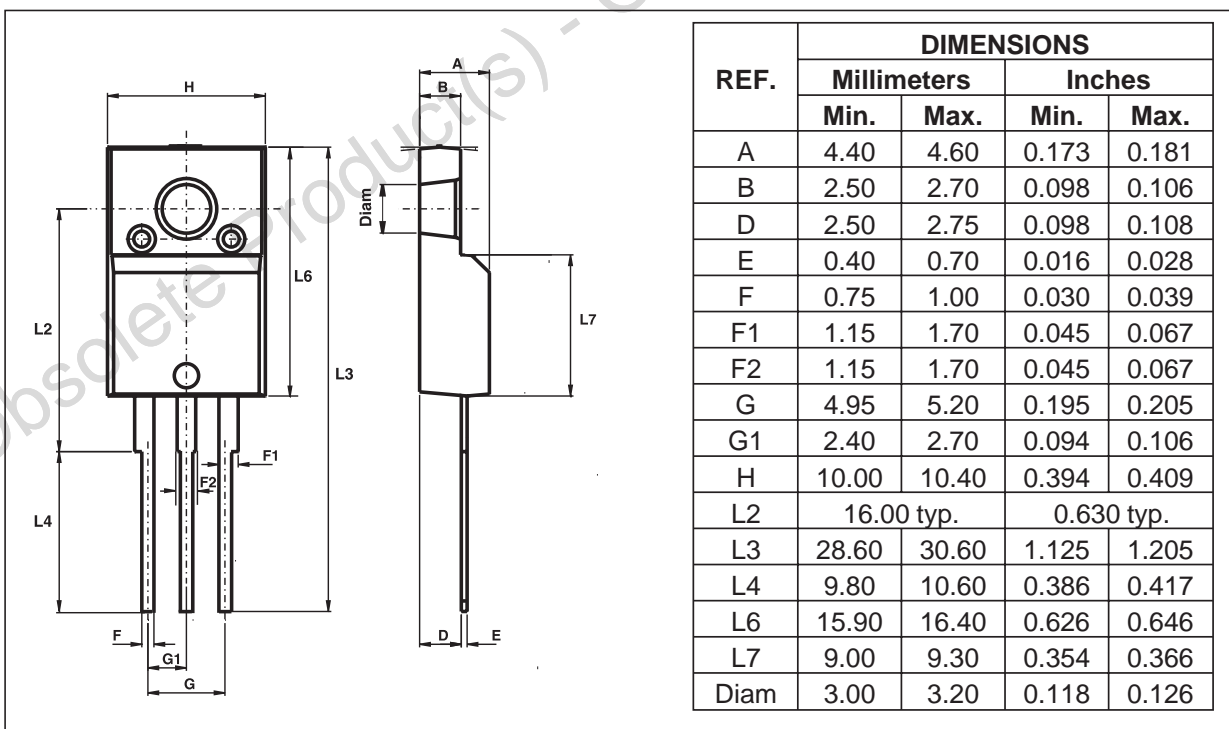
FOOT PRINT (in millimeters)
D²PAK



PACKAGE MECHANICAL DATA
TO-220FPAB



PACKAGE MECHANICAL DATA
ISOWATT220AB (JEDEC compatible)



Ordering code	Marking	Package	Weight	Base qty	Delivery mode
BYW51-200	BYW51-200	TO220AB	2.2 g.	50	Tube
BYW51F-200	BYW51F-200	ISOWATT220AB	2.08 g.	50	Tube
BYW51G-200	BYW51G-200	D ² PAK	1.48 g.	50	Tube
BYW51FP-200	BYW51FP-200	TO-220FPAB	2g	50	Tube
BYW51R-200	BYW51R-200	I ² PAK	1.49 g	50	Tube

- Recommended torque value (TO-220AB): 0.8 N.m.
- Maximum torque value (TO-220AB): 1.0 N.m.
- Recommended torque value (ISOWATT220AB / TO-220FPAB): 0.55 N.m.
- Maximum torque value (ISOWATT220AB / TO-220FPAB): 0.70 N.m.
- Epoxy meets UL94,V0

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