

DAMPER + MODULATION DIODE FOR VIDEO

Table 1: Main Product Characteristics

	DAMPER	MODUL.
$I_{F(AV)}$	6 A	6 A
V_{RRM}	1500 V	600 V
$t_{rr} (typ)$	150 ns	60 ns
$V_F (typ)$	1.1 V	1.0 V

FEATURES AND BENEFITS

- Full kit in one package
- High breakdown voltage capability
- Very fast recovery diode
- Specified turn on switching characteristics
- Low static and peak forward voltage drop for low dissipation
- Insulated version:
- Insulated voltage = 2000 V_{RMS}
- Capacitance = 7 pF
- Planar technology allowing high quality and best electrical characteristics
- Outstanding performance of well proven DTV as damper and new faster Turbo 2 600V technology as modulation

DESCRIPTION

High voltage semiconductor especially designed for horizontal deflection stage in standard and high resolution video display with E/W correction.

The insulated TO-220FPAB package includes both the DAMPER diode and the MODULATION diode, thanks to a dedicated design.

Assembled on automated line, it offers very low dispersion values on insulating and thermal performances.

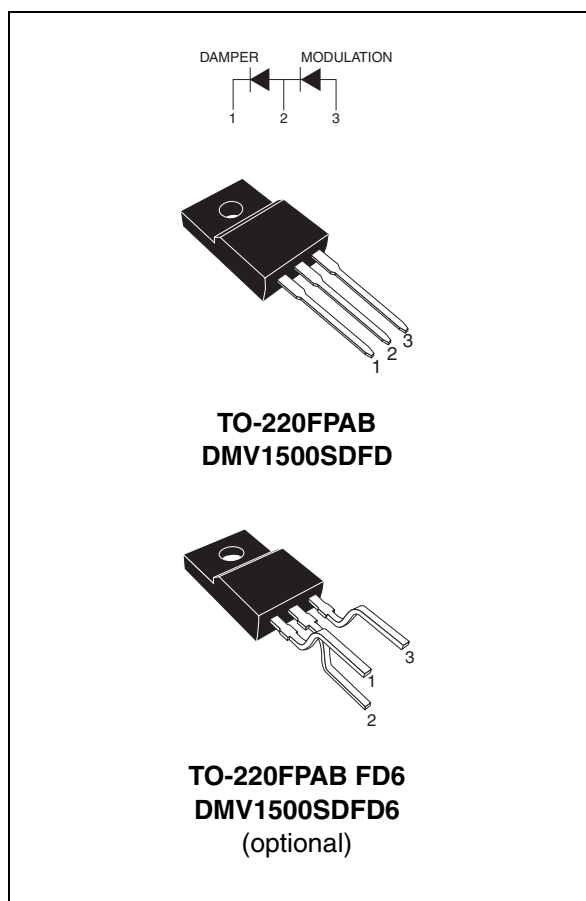


Table 2: Order Codes

Part Number	Marking
DMV1500SDFD	DMV1500SD
DMV1500SDFD6	DMV1500SD

Table 3: Absolute Ratings (limiting values, per diode)

Symbol	Parameter	Value		Unit
		Damper	Modul.	
V_{RRM}	Repetitive peak reverse voltage	1500	600	V
I_{FSM}	Surge non repetitive forward current $t_p = 10\text{ms}$ sinusoidal	50	50	A
T_{stg}	Storage temperature range	-40 to +150		°C
T_j	Maximum operating junction temperature	150		°C

Table 4: Thermal resistances

Symbol	Parameter	Value (max.)	Unit
$R_{th(j-c)}$	Junction to case thermal resistance	4	°C/W

Table 5: Static Electrical Characteristics

Symbol	Parameter	Test conditions		Value				Unit
				T _j = 25°C		T _j = 125°C		
				Typ.	Max.	Typ.	Max.	
I _R *	Reverse leakage current	Damper	V _R = 1500 V		100	100	1000	μA
		Modul.	V _R = 600 V		3	3	30	
V _F **	Forward voltage drop	Damper	I _F = 6 A	1.2	1.75	1.1	1.5	V
		Modul.	I _F = 6 A	1.15	1.4	1	1.25	

Pulse test: * $t_p = 5\text{ ms}$, $\delta < 2\%$

** $t_p = 380\text{ }\mu\text{s}$, $\delta < 2\%$

To evaluate the maximum conduction losses of the **DAMPER** and **MODULATION** diodes use the following equations :

DAMPER: $P = 1.2 \times I_{F(AV)} + 0.050 \times I_F^2(\text{RMS})$

MODULATION: $P = 0.89 \times I_{F(AV)} + 0.055 \times I_F^2(\text{RMS})$

Table 6: Recovery Characteristics

Symbol	Parameter	Test conditions		Value				Unit
				Damper		Modul.		
				Typ.	Max.	Typ.	Max.	
t _{rr}	Reverse recovery time	I _F = 100mA I _R =100mA I _{RR} = 10mA	T _j = 25°C	1000	2000	250	400	ns
		I _F = 1A dI _F /dt = -50 A/μs V _R =30V	T _j = 25°C	150	250	60	85	

Table 7: Turn-On Switching Characteristics

Symbol	Parameter	Test conditions	Value		Unit
			Typ.	Max.	
t_{fr}	Forward recovery time	Damper $I_F = 6\text{ A}$ $di_F/dt = 80\text{ A}/\mu\text{s}$ $V_{FR} = 3\text{ V}$ $T_j = 100^\circ\text{C}$	350	500	ns
		Modul. $I_F = 6\text{ A}$ $di_F/dt = 80\text{ A}/\mu\text{s}$ $V_{FR} = 2\text{ V}$ $T_j = 100^\circ\text{C}$	70	125	
V_{FP}	Peak forward voltage	Damper $I_F = 6\text{ A}$ $di_F/dt = 80\text{ A}/\mu\text{s}$ $T_j = 100^\circ\text{C}$	26	36	V
		Modul. $I_F = 6\text{ A}$ $di_F/dt = 80\text{ A}/\mu\text{s}$ $T_j = 100^\circ\text{C}$	5	7.5	

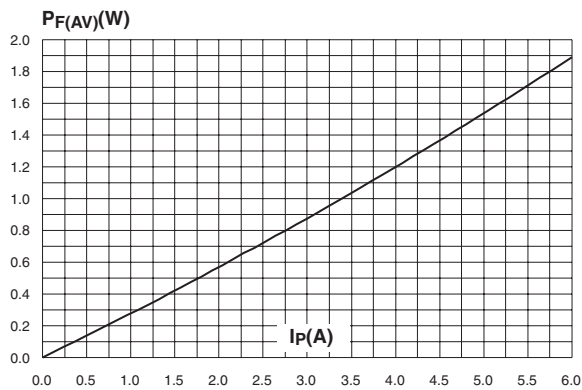
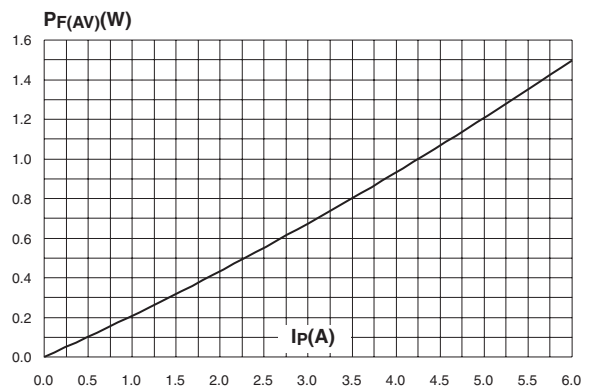
Figure 1: Power dissipation versus peak forward current (triangular waveform, $\delta=0.45$) (damper diode)Figure 2: Power dissipation versus peak forward current (triangular waveform, $\delta=0.45$) (modulation diode)

Figure 3: Average forward current versus ambient temperature

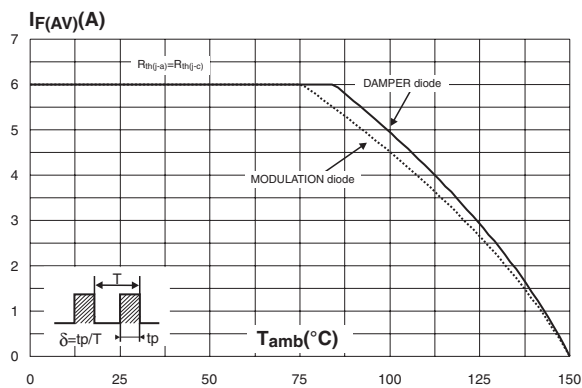


Figure 4: Forward voltage drop versus forward current (damper diode)

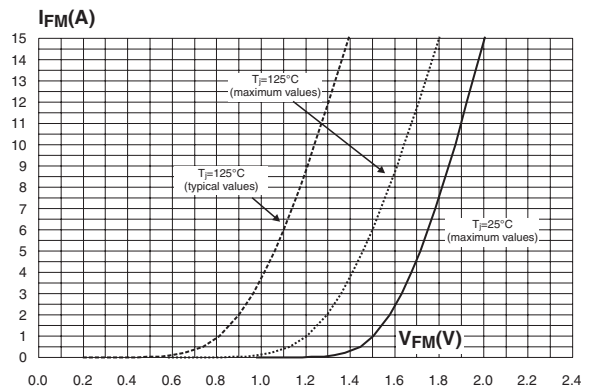


Figure 5: Forward voltage drop versus forward current (modulation diode)

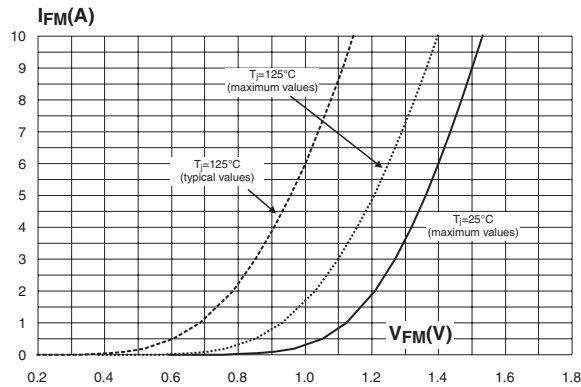


Figure 6: Relative variation of thermal impedance junction to case versus pulse duration

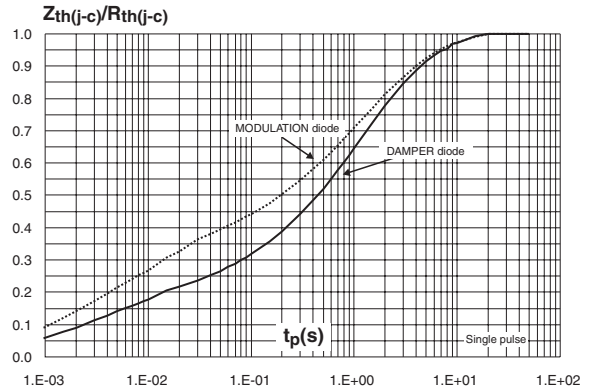


Figure 7: Reverse recovery charges versus dI_F/dt (damper diode)

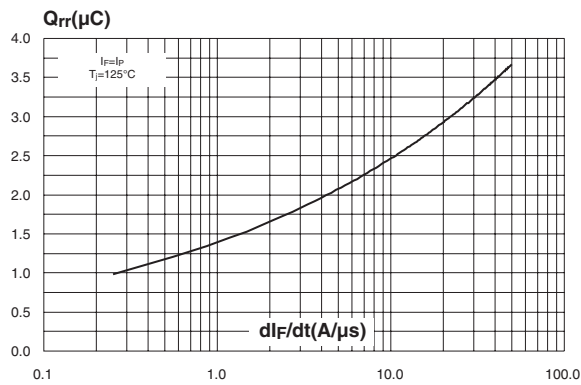


Figure 8: Reverse recovery charges versus dI_F/dt (modulation diode)

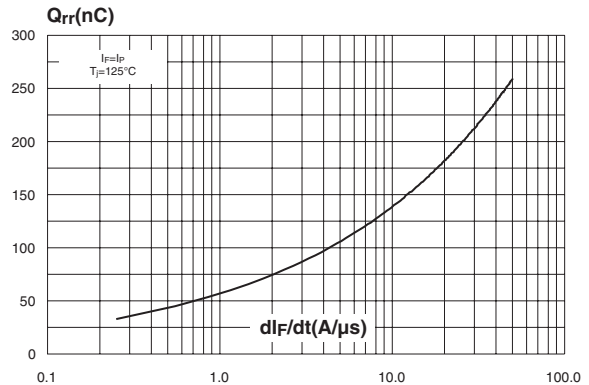


Figure 9: Peak reverse recovery current versus dI_F/dt (damper diode)

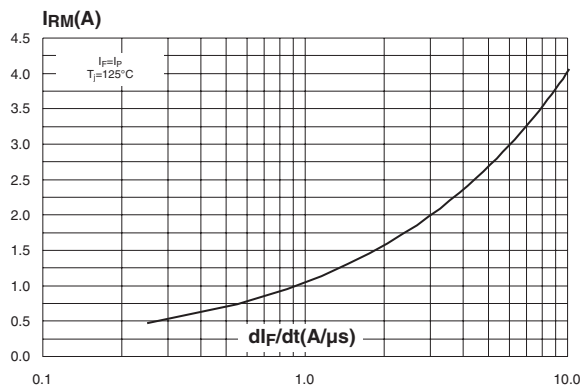


Figure 10: Peak reverse recovery current versus dI_F/dt (modulation diode)

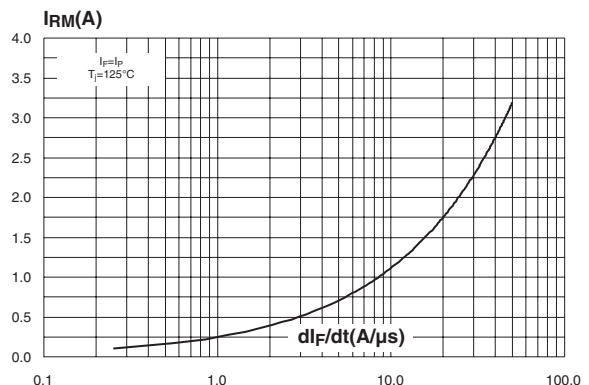


Figure 11: Transient peak forward voltage versus di_F/dt (damper diode, typical values)

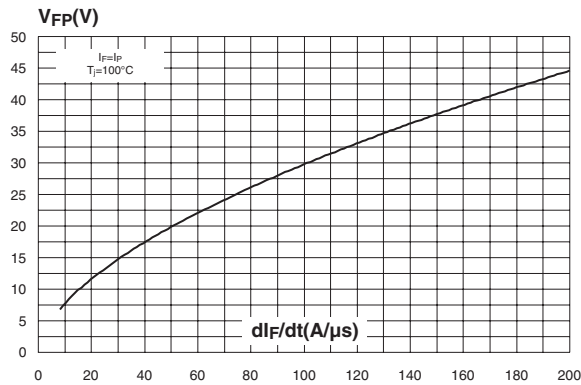


Figure 12: Transient peak forward voltage versus di_F/dt (modulation diode, typical values)

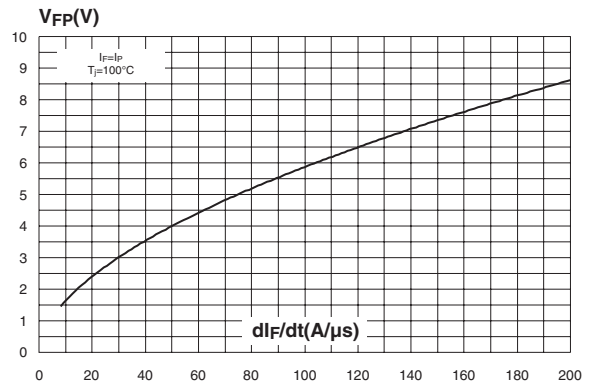


Figure 13: Forward recovery time versus di_F/dt (damper diode, typical values)

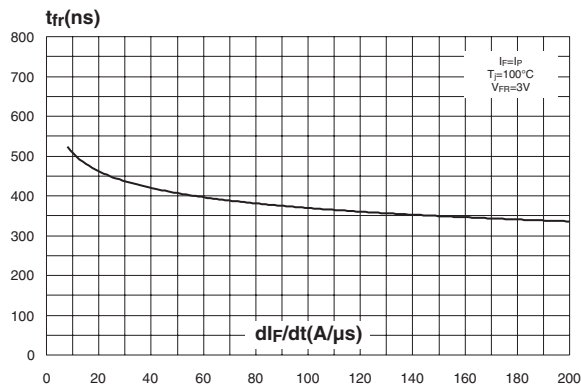


Figure 14: Forward recovery time versus di_F/dt (modulation diode, typical values)

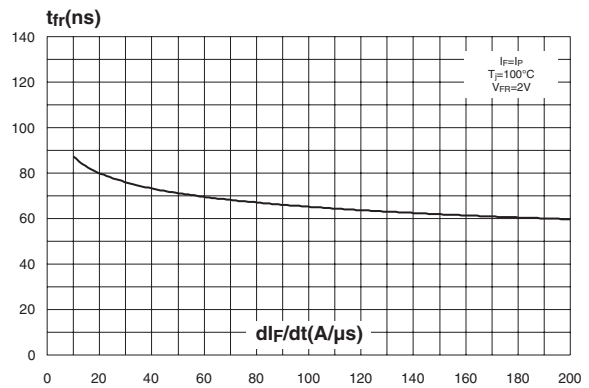


Figure 15: Relative variation of dynamic parameters versus junction temperature

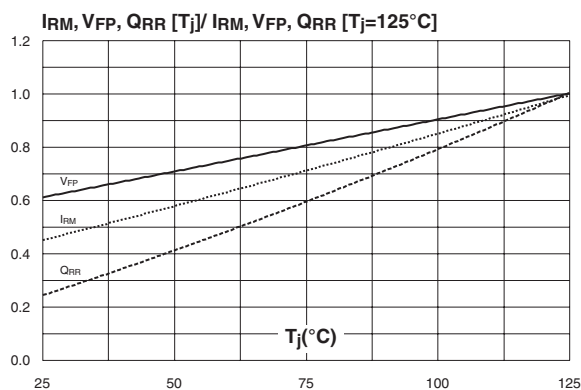


Figure 16: Junction capacitance versus reverse voltage applied (typical values)

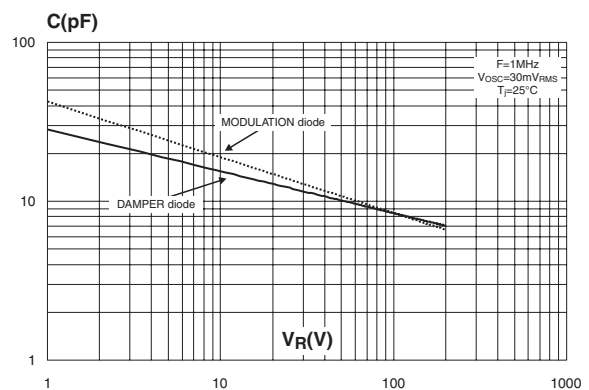


Figure 17: TO-220FPAB FD6 Option Package Mechanical Data

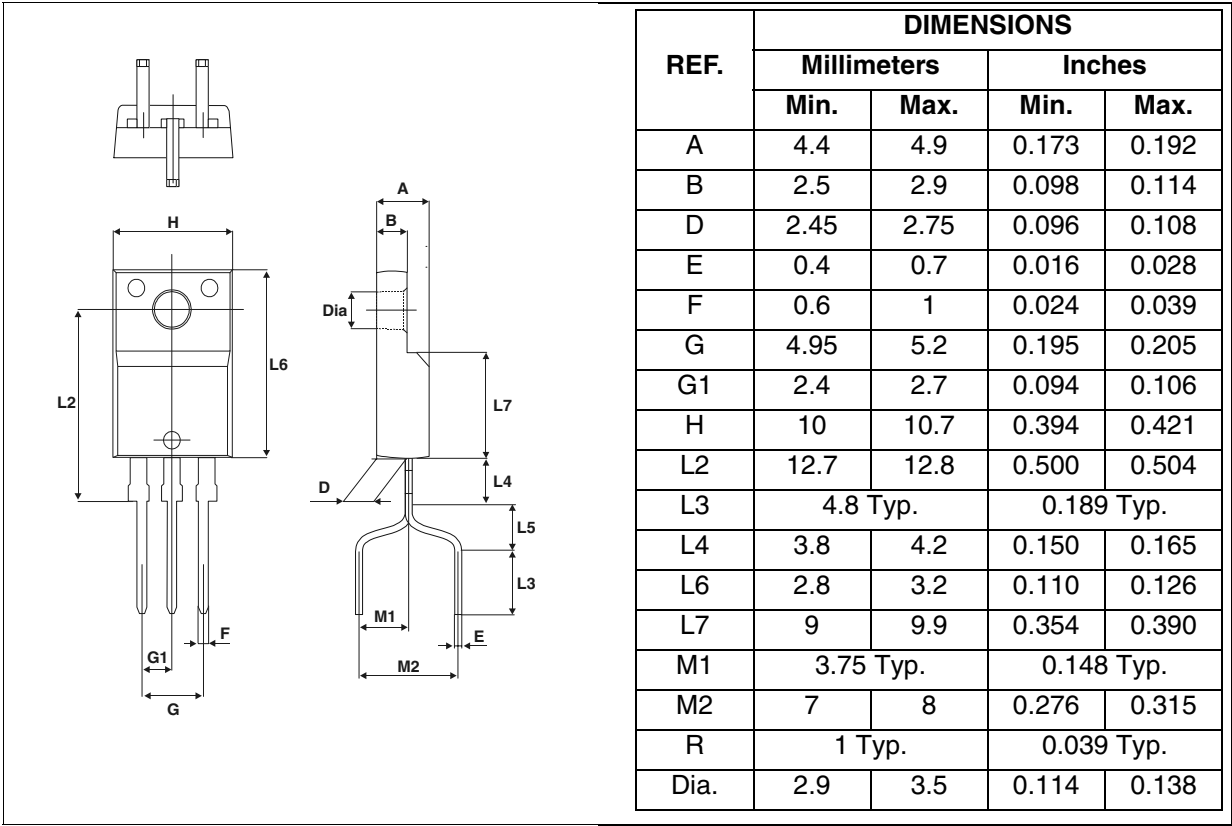


Figure 18: TO-220FPAB FD6 PCB layout (typical, in millimeters)

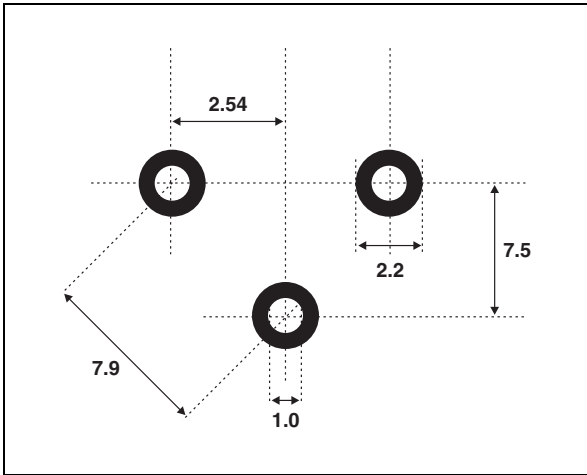


Figure 19: TO-220FPAB Package Mechanical Data

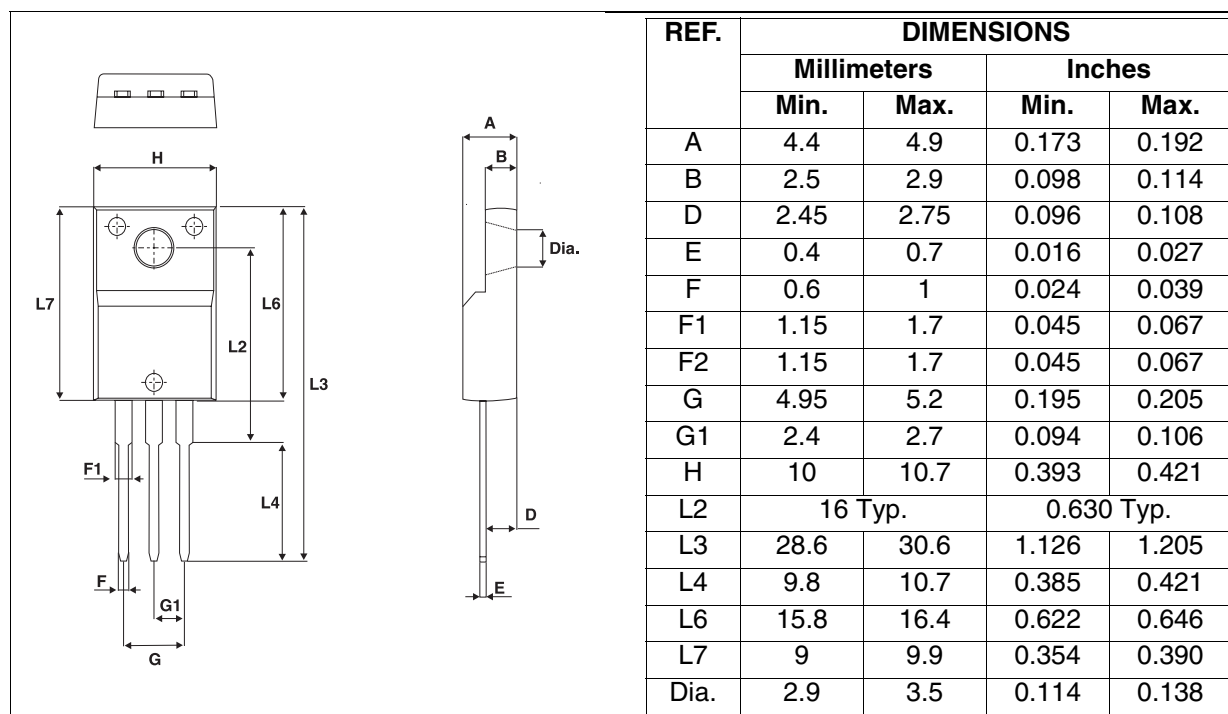


Table 8: Ordering Information

Part Number	Marking	Package	Weight	Base qty	Delivery mode
DMV1500SDFD	DMV1500SD	TO-220FPAB	2.4 g	50	Tube
DMV1500SDFD6	DMV1500SD	TO-220FPAB FD6	2.4 g	45	Tube

Table 9: Revision History

Date	Revision	Description of Changes
25-Oct-2004	1	First issue

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