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PKC-136

Application Specific Discretes ASD™

PEAK CLAMP

MAIN PRODUCT CHARACTERISTICS

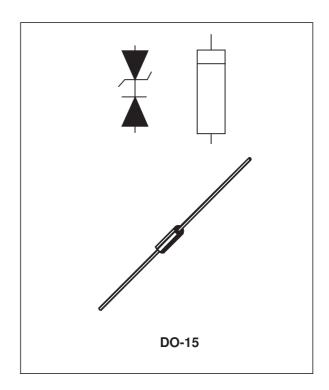
V _{BR}	160Vdc
V_{DRM}	700Vdc
P	1.5W

FEATURES

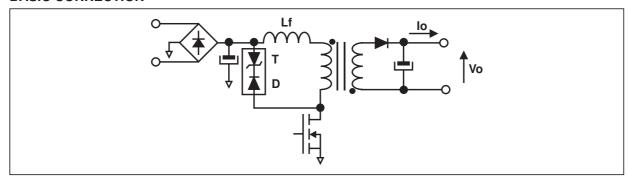
- Protection of the Mosfet in flyback power supply
- TRANSIL[™] and blocking diode in a single package

BENEFITS

- Accurate voltage clamping regardless load
- Reduced current loop
- Reduced EMI emission
- High integration
- Fast assembly
- Reduced losses in stand by mode



BASIC CONNECTION



ABSOLUTE MAXIMUM RATINGS (limiting values)

Symbol	Parameter	Value	Unit
T _{stg}	Storage temperature	- 40 to + 150	°C
Tj	Junction temperature	150	°C
Р	Maximum power dissipation T°lead = 90°C	1.5	W

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ELECTRICAL CHARACTERISTICS TRANSIL

Cumbal	Dovernator	Test conditions		Value			11
Symbol	Parameter			Min.	Тур.	Max.	Unit
I _{RM}	Leakage current	V _R = 136V	T _j = 25°C			1	μΑ
	ŭ		T _j =125°C			10	
V_{BR}	Breakdown voltage	I _R = 1mA pulse test < 50ms	T _j = 25°C	150	160	170	V
R _d	Dynamical Resistance	tp < 500ns between I = 0.5Amps and I = 1.5Amps	T _j = 125°C			4	Ω
αΤ	Temperature Coefficient					10.8	10 ⁻⁴ /°C
V _{sCL}	Surge Clamping voltage	lpp = 2.7Amps 10/1000μs				219	V

CALCULATION OF THE CLAMPING VOLTAGE:

In repetitive mode and for low current rating, use the equation (1) and (2) to calculate the breakdown voltage V_{BR} of the transil versus the operating junction temperature and use the equation (3) to calculate the clamping voltage versus the transil current lpp and the temperature.

$$\Delta V_{BB} = \alpha T(T_i - 25) V_{BB}(25^{\circ}C) \qquad (1)$$

$$V_{BR}(T_j) = V_{BR}(25^{\circ}C) + \Delta V_{BR}$$
 (2)

$$V_{CL}(T_i) = V_{BB}(T_i) + Rd.lpp$$
 (3)

ELECTRICAL CHARACTERISTICS DIODE (Tj = 25°C unless otherwise specified)

Cumbal	Parameter	eter Tests conditions		Value			11:4
Symbol	Parameter			Min.	Тур.	Max.	Unit
I _R	Reverse leakage current	$V_R = V_{RRM}$ $T_i = 25$ °C				3	μΑ
			T _i = 125°C		3	20	
V _{RRM}	Repetitive Peak Reverse Voltage	T _j = 25°C		700			V
trr	Reverse Recovery Time	$I_F = 1A \ dI_F / dt = -50A/\mu s$ $V_R = 30V$				45	ns
V _{FP}	Peak Forward Voltage	$I_F = 3A$ $T_j = 25$ °C				12	V
		dI _F / dt = 100A/μs	T _j = 125°C			18	

CAPACITANCE

Symbol	Parameter	Typical Value	Unit
С	Total Parasitic capacitance 1MHz 30mV	35	pF

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
R _{th(j-l)}	Junction to leads L = 10mm	40	°C/W
R _{th(j-a)}	Junction to ambiant condition see note 1	105	°C/W

Note 1: Device mounted on a epoxy FR4 board of 35µm thickness

Lead Length: 10mm Pad diameter: 4mm Track width: 1mm Track length: 25mm

The Rth_(j-a) can be reduced by replacing the Cu track by plan:

$$\begin{split} S(Cu) &= 1.5 \text{cm}^2/\text{lead} & R_{th(j-a)} = 65^{\circ}\text{C/W} \\ S(Cu) &= 3.5 \text{cm}^2/\text{lead} & R_{th(j-a)} = 60^{\circ}\text{C/W} \end{split}$$

Fig. 1: Peak pulse power versus exponential pulse duration.

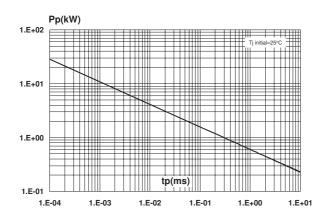


Fig. 3: Average power dissipation versus ambient temperature.

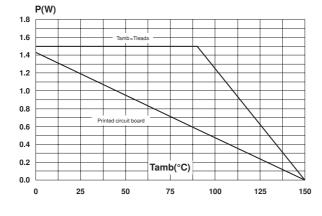


Fig. 2: Relative variation of peak pulse power versus initial junction temperature.

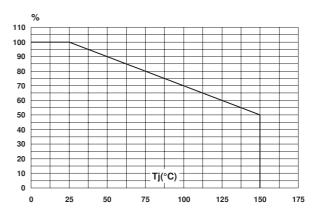


Fig. 4: Variation of thermal impedance junction to ambient versus pulse duration (printed circuit board epoxy FR4)

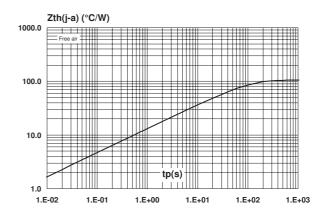


Fig. 5: Thermal resistance junction to ambient versus copper surface under each lead.

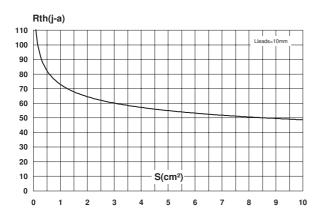


Fig. 6-2: Reverse leakage current versus reverse voltage applied (typical values, for diode).

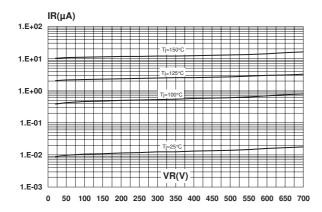


Fig. 8: Clamping voltage versus peak pulse current (maximum values).

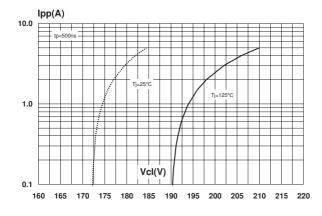


Fig. 6-1: Reverse leakage current versus reverse voltage applied (typical values, for Transil).

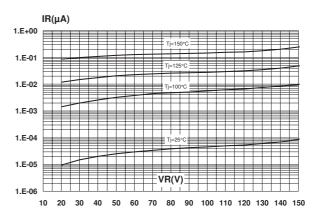


Fig. 7: Transient peak forward voltage versus d_{IF}/dt (90% confidence).

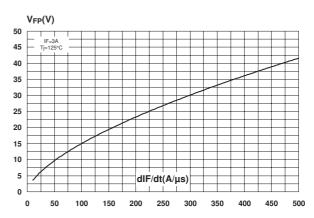
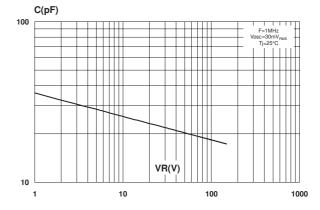


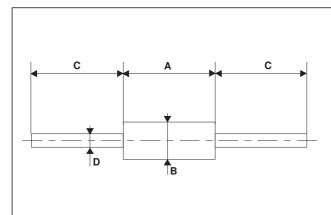
Fig. 9: Junction capacitance versus reverse voltage applied on clamping characteristic (typical values).



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PACKAGE MECHANICAL DATA

DO-15



REF.	DIMENSIONS			
	Millimeters		Inc	hes
	Min. Max.		Min.	Max.
А	6.05	6.75	0.238	0.266
В	2.95	3.53	0.116	0.139
С	26	31	1.024	1.220
D	0.71	0.88	0.028	0.035

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
PKC136	Partnumber Diode cathode ring	DO-15	0.4g	1000	Ammopack
PKC136-RL	Partnumber Diode cathode ring	DO-15	0.4g	6000	Tape and reel

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