

Preliminary

HiPerFET™ Power Module

$$V_{DSS} = 500 \text{ V}$$

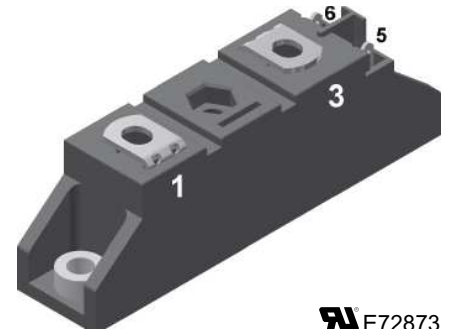
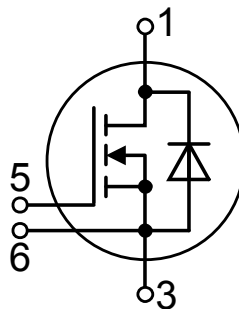
$$I_{D25} = 60 \text{ A}$$

$$R_{DS(on)} = 65 \text{ m}\Omega$$

 High dv/dt, Low t_{rr} , HDMOS™ Family

Part number

VMO60-05F


 E72873


Features / Advantages:

- Single MOSFET
- Direct copper bonded Al_2O_3 ceramic base plate
- Low $R_{DS(on)}$ HDMOS™ process
- Low package inductance for high speed switching
- Kelvin source contact
- Keyed twin plugs
- High power density
- Low losses

Applications:

- Switched-mode and resonant-mode power supplies
- Uninterruptible power supplies (UPS)
- DC servo and robot drives
- DC choppers

Package: TO-240AA

- Isolation Voltage: 4800 V~
- Industry standard outline
- RoHS compliant
- Soldering pins for PCB mounting
- Base plate: DCB ceramic
- Reduced weight
- Advanced power cycling

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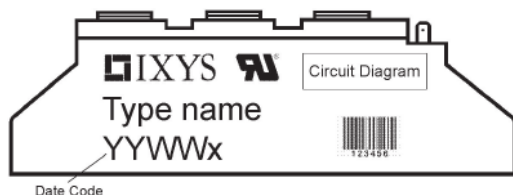
MOSFETs				Ratings			
Symbol	Definitions	Conditions	min.	typ.	max.	Unit	
V _{DSS}	drain source breakdown voltage	T _{VJ} = 25°C to150°C			500	V	
V _{DGR}	drain gate voltage	R _{GS} = 10 kΩ T _{VJ} = 25°C to150°C			500	V	
V _{GS}	gate source voltage	Continuous			±20	V	
V _{GSM}	max. transient gate source voltage	Transient			±30	V	
I _{D25}	continuous drain current	T _C = 25°C			60	A	
I _{D100}	drain current	T _C = 100°C			37	A	
I _{DM}	maximum pulsed drain current	t _p = 10 μs, pulse width limited by T _{JM} T _C = 25°C			240	A	
P _{tot}	total power dissipation	T _C = 25°C			590	W	
V _{DSS}	drain source breakdown voltage	V _{GS} = 0 V	500			V	
V _{GS(th)}	gate threshold voltage	V _{DS} = V _{GS} ; I _D = 24 mA	2		4	V	
I _{GSS}	gate source leakage current	V _{GS} = ±20 V DC; V _{DS} = 0			500	nA	
I _{DSS}	drain source leakage current	V _{DS} = V _{DSS} ; V _{GS} = 0 V V _{DS} = 0.8 • V _{DSS} ; V _{GS} = 0 V T _{VJ} = 25°C T _{VJ} = 125°C			600 3	μA mA	
R _{DS(on)}	staticdrain source on resistance	V _{GS} = 10 V; I _D = 0.5 • I _{D25} Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 % T _{VJ} = 25°C		65	75	mΩ	
g _{fs}	forward transconductance	V _{DS} = 10 V; I _D = 0.5 • I _{D25} pulsed	30	60		S	
C _{iss}	input capacitance	V _{GS} = 0 V; V _{DS} = 25 V; f = 1 MHz		12.6		nF	
C _{oss}	output capacitance			1.35		nF	
C _{rss}	reverse transfer (Miller) capacitance			0.405		nF	
t _{d(on)}	turn-on delay time	V _{GS} = 10 V; V _{DS} = 0.5 • V _{DSS} ; I _D = 0.5 • I _{D25} R _G = 1 Ω (external), resistive load		50		ns	
t _r	current rise time			45		ns	
t _{d(off)}	turn-off delay time			250		ns	
t _f	current fall time			30		ns	
Q _g	total gate charge	V _{GS} = 10 V; V _{DS} = 0.5 • V _{DSS} ; I _D = 0.5 • I _{D25}		405		nC	
Q _{gs}	gate source charge			90		nC	
Q _{gd}	gate drain (Miller) charge			180		nC	
R _{thJC}	thermal resistance junction to case	with heat transfer paste			0.21	K/W	
R _{thJH}	thermal resistance junction to heatsink			0.41		K/W	

Source-Drain Diodes			Ratings			
Symbol	Definitions	Conditions	min.	typ.	max.	
I _s	<i>continuous source current</i>	V _{GS} = 0 V			60	A
I _{SM}	<i>maximum pulsed source current</i>	Repetitive; pulse width limited by T _{JM}			240	A
V _{SD}	<i>forward voltage drop</i>	I _F = I _S ; V _{GS} = 0 V Pulse test, t ≤ 300 μs, duty cycle d ≤ 2 %			1.5	V
t _{rr}	<i>reverse recovery time</i>	I _F = I _S , -di/dt = 100 A/μs; V _{DS} = 100 V; V _{GS} = 0 V			250	ns

 Data according to IEC 60747 and refer to a single thyristor/diode unless otherwise stated. $T_J = 25^{\circ}\text{C}$, unless otherwise specified

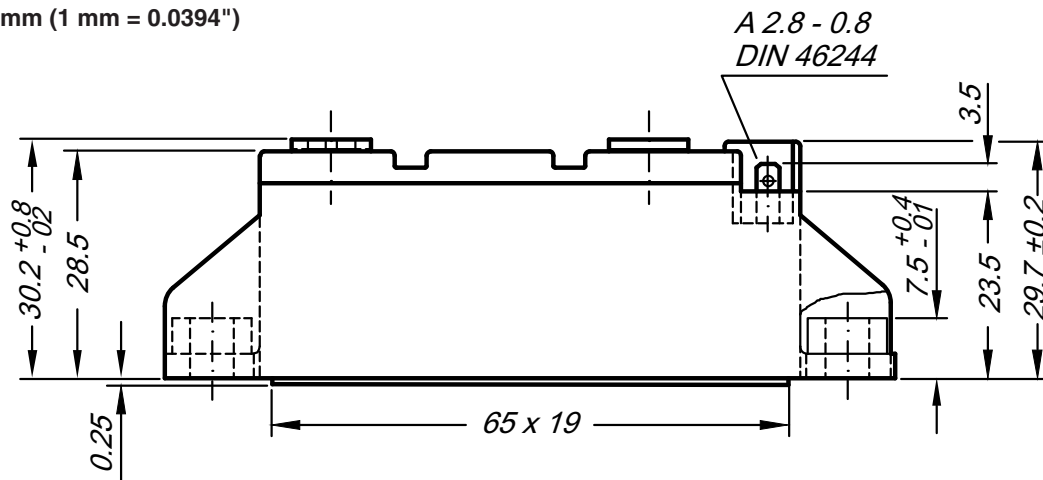


Package	TO-240AA			Ratings			
Symbol	Definitions	Conditions		min.	typ.	max.	Unit
I _{RMS}	RMS current	per terminal				200	A
T _{VJ}	virtual junction temperature			-40		150	°C
T _{VJM}	maximum virtual junction temperature					150	°C
T _{stg}	storage temperature			-40		125	°C
Weight					76		g
M _D	mounting torque			2.5		4	Nm
M _T	terminal torque			2.5		4	Nm
d _{Spp/App}	creepage distance on surface / striking distance through air	terminal to terminal	13.0	9.7			mm
d _{Spb/Appb}		terminal to backside	16.0	16.0			mm
V _{ISOL}	isolation voltage	t = 1 second	50/60 Hz, RMS, I _{ISOL} ≤ 1 mA		4800		V
		t = 1 minute					

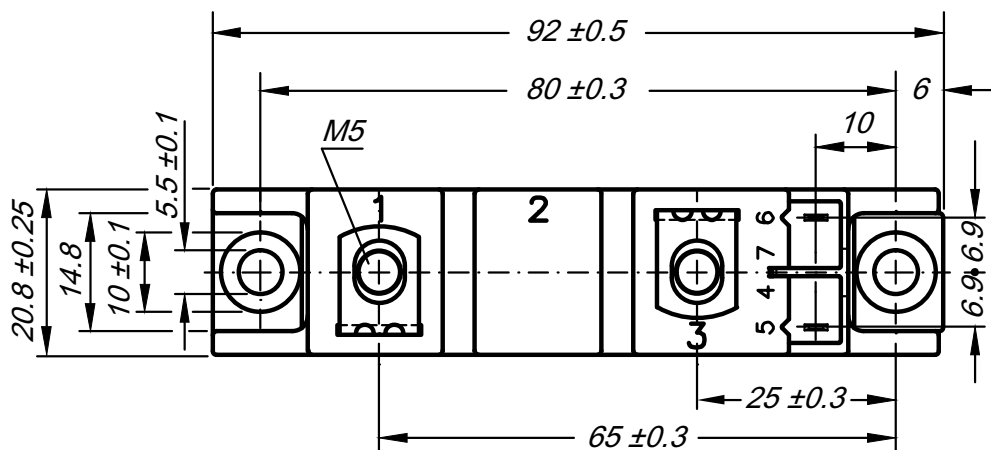


Outlines TO-240AA

Dimensions in mm (1 mm = 0.0394")



General tolerance: DIN ISO 2768 class „c“



Optional accessories for modules

Keyed gate/cathode twin plugs with wire length = 350 mm, gate = white, cathode = red

Type ZY 200L (L = Left for pin pair 4/5)

Type ZY 200E (E = Left for pin pair 4/5)
Type ZY 200R (R = Right for pin pair 6/7) } UL 758, style 3751

