

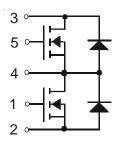
Preliminary Technical Information

Trench Gate HiperFET Power MOSFET

FMM50-025TF

Phase Leg Topology

N-Channel



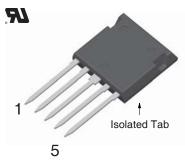
Symbol	Test Conditions	Maximum Rating		
T _J		-55 +150	°C	
T _{JM}		150	°C	
T _{stg}		-55 +150	°C	
V _{ISOLD}	50/60H _Z , RMS, t = 1min, Leads-to-Tab	2500	V~	
T,	1.6mm (0.062 in.) from Case for 10s	300	°C	
T _{SOLD}	Plastic Body for 10s	260	°C	
F _c	Mounting Force	20120/ 4.527	N/lb.	

Symbol	Test Conditions	Maximum Ratings	Maximum Ratings		
V _{DSS}	$T_J = 25^{\circ}C \text{ to } 150^{\circ}C$	250	V		
$\mathbf{V}_{\mathtt{DGR}}$	$T_{_{\mathrm{J}}} = 25^{\circ}\text{C} \text{ to } 150^{\circ}\text{C}, R_{_{\mathrm{GS}}} = 1\text{M}\Omega$	250	V		
V _{GSM}	Transient	$\pm~30$	V		
I _{D25}	T _C = 25°C	30	Α		
I _{DM}	$T_{\rm C} = 25^{\circ}$ C, Pulse Width Limited by $T_{\rm JM}$	130	Α		
I _A	T _C = 25°C	25	Α		
E _{AS}	$T_{c} = 25^{\circ}C$	400	mJ		
dV/dt	$I_{S} \le I_{DM}, V_{DD} \le V_{DSS}, T_{J} \le 150^{\circ}C$	15	V/ns		
P _D	T _c = 25°C	125	W		

Symbol	Test Conditions	Chara Min.	aracteristic Values .		
C _P	Coupling Capacitance Between Shorted Pins and Mounting Tab in the Case		40	pF	
d _s ,d _A d _s ,d _A	Pin - Pin Pin - Backside Metal	1.7 5.5		mm mm	
Weight			9	g	

 $\begin{array}{lll} \textbf{V}_{\text{DSS}} &=& 250 \textbf{V} \\ \textbf{I}_{\text{D25}} &=& 30 \textbf{A} \\ \textbf{R}_{\text{DS(on)}} &\leq& 60 \text{m} \Omega \\ \textbf{t}_{\text{rr(typ)}} &=& 84 \text{ns} \end{array}$

ISOPLUS i4-Pak™



Features

- Silicon Chip on Direct-Copper Bond (DCB) Substrate
 - UL Recognized Package
 - Isolated Mounting Surface
 - 2500V Electrical Isolation
- Avalanche Rated
- Low Q_G
- Low Drain-to-Tab capacitance
- Low package inductance

Advantages

- Low Gate Drive RRequirement
- High power density
- Fast Intrinsic Rectifier
- Low Drain to Ground Capacitance
- Fast Switching

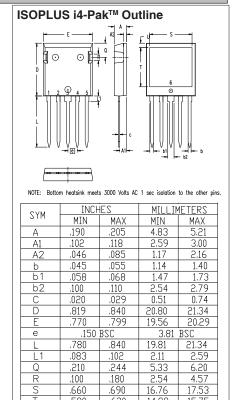
Applications

- DC and AC Motor Drives
- UPS, Solar and Wind Power Inverters
- Synchronous Rectifiers
- Multi-Phase DC to DC Converters
- Industrial Battery Chargers
- Switching Power Supplies



FMM50-025TF

Symbol Test Conditions			Characteristic Values			
$(T_J = 25^{\circ}C l)$	Unless Otherwise Specified)	Min.	Тур.	Max.		
BV _{DSS}	$V_{GS} = 0V, I_D = 1mA$	250			V	
V _{GS(th)}	$V_{DS} = V_{GS}$, $I_{D} = 250\mu A$	2.5		4.5	V	
I _{GSS}	$V_{GS} = \pm 20 \text{ V}, V_{DS} = 0 \text{V}$			± 100	nA	
DSS	$V_{DS} = V_{DSS}, V_{GS} = 0V$ $T_{J} = 125^{\circ}C$			1 150	μ Α μ Α	
R _{DS(on)}	$V_{GS} = 10V, I_{D} = 25A, Note 1$			60	mΩ	
g _{fs}	$V_{DS} = 10V, I_{D} = 25A, Note 1$	35	58		S	
C _{iss}			4000		рF	
C _{oss}	$V_{GS} = 0V, V_{DS} = 25 V, f = 1 MHz$		410		pF	
C _{rss}			60		pF	
t _{d(on)}	Resistive Switching Times		14		ns	
t _r	$V_{GS} = 15V, V_{DS} = 0.5 \bullet V_{DSS}, I_{D} = 25A$		25		ns	
t _{d(off)}	$R_{\rm G} = 5\Omega$ (External)		47		ns	
t, J			25		ns	
$Q_{g(on)}$			78		nC	
Q _{gs}	$V_{GS} = 10V, V_{DS} = 0.5 \cdot V_{DSS}, I_{D} = 25A$		19		nC	
\mathbf{Q}_{gd}			22		nC	
R _{thJC}				1.0 °	C/W	
R _{thCS}			0.15	0	C/W	



.690

.620

.080

14.99

1.65

15.75

2.03

.660 .590

.065

Source-Drain Diode

SymbolTest ConditionsCharacteristic Value(T_ = 25°C Unless Otherwise Specified)Min. Typ. Max			Values Max.		
I _s	V _{GS} = 0V			30	
I _{sm}	Repetitive, Pulse Width Limited by $T_{_{\rm JM}}$			200	Α
V _{SD}	$I_{\rm F} = 50 {\rm A}, \ V_{\rm GS} = 0 {\rm V}, \ {\rm Note} \ 1$			1.5	V
t _{rr}	I - 25Δ -di/dt - 250Δ/μs		84		ns
I _{RM}	$I_F = 25A$, $-di/dt = 250A/\mu s$ $V_R = 100V$, $V_{GS} = 0V$		15.4		Α
Q_{RM} $\int V_{R} = 100V, V_{GS} = 0V$		650		nC	

Note 1. Pulse test, $t \le 300\mu s$, duty cycle, $d \le 2 \%$.

PRELIMINARY TECHNICAL INFORMATION

The product presented herein is under development. The Technical Specifications offered are derived from data gathered during objective characterizations of preliminary engineering lots; but also may yet contain some information supplied during a pre-production design evaluation. IXYS reserves the right to change limits, test conditions, and dimensions without notice.

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