Target Data 05/01

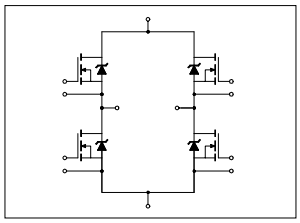
International
IOR Rectifier

19MT050XF

"FULL-BRIDGE" FREDFET MTP HEXFET® Power MOSFET

Features

- Low On-Resistance
- High Performance Optimised Built-in Fast Recovery Diodes
- Fully Characterized Capacitance and Avalanche Voltage and Current
- Optional SMT Thermystor Inside
- Aluminum Nitride DBC
- Very Low Stray Inductance Design for High Speed Operation



V_{DSS} = 500V

$R_{DS(on)\ typ.}$ = 0.152Ω

I_D = 31A

@ T_C = 25°C

Benefits

- Low Gate Charge Qg results in Simple Drive Requirement
- Improved Gate, Avalanche and Dynamic dv/dt Ruggedness
- Low Trr and Soft Diode Reverse Recovery
- Optimized for Welding, UPS and SMPS Applications
- Outstanding ZVS and High Frequency Operation
- Direct Mounting to Heatsink
- PCB Solderable Terminals
- Very Low Junction-to-Case Thermal Resistance

Absolute Maximum Ratings

	Parameters		Max	Units
I_D	Continuos Drain Current @ V_{GS} = 10V	@ T_C = 25°C	31	A
		@ T_C = 100°C	19	
I_{DM}	Pulsed Drain Current (1)		124	
P_D	Maximum Power Dissipation	@ T_C = 25°C	1000	W
		@ T_C = 100°C	420	
V_{GS}	Gate-to-Source Voltage		± 30	V
V_{ISOL}	RMS Isolation Voltage, Any Terminal to Case, t = 1 min		2500	
dv/dt	Peak Diode Recovery dv/dt (3)		5	V/ ns

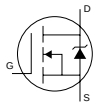
Electrical Characteristics @ T_J = 25°C (unless otherwise specified)

	Parameters	Min	Typ	Max	Units	Test Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	500			V	V_{GS} = 0V, I_C = 250µA
$\Delta V_{(BR)DSS}/\Delta T_J$	Temperature Coeff. of Breakdown Voltage		0.55		V/°C	I_D = 1mA, reference to T_J = 25°C
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance		0.152		Ω	V_{GS} = 10V, I_D = 19A (4)
$V_{GS(th)}$	Gate Threshold Voltage	3.5		5.5	V	V_{DS} = V_{GS}, I_D = 250µA
I_{DSS}	Drain-to-Source Leakage Current			50	µA	V_{DS} = 500V, V_{GS} = 0V
				2	mA	V_{DS} = 400V, V_{GS} = 0V, T_J = 125°C
I_{GSS}	Gate-to-Source Forward Leakage			100	nA	V_{GS} = 30V
	Gate-to-Source Reverse Leakage			-100		V_{GS} = - 30V

Dynamic Characteristics @ T_J = 25°C (unless otherwise specified)

	Parameters	Min	Typ	Max	Units	Test Conditions
g_{fs}	Forward Transconductance	12			S	V_{DS} = 50V, I_D = 19A
Q_g	Total Gate Charge			195	nC	I_D = 31A
Q_{gs}	Gate-to-Source Charge			75		V_{DS} = 400V
Q_{gd}	Gate-to-Drain ("Miller") Charge			90		V_{GS} = 10V (4)
C_{iss}	Input Capacitance		5300		pF	V_{GS} = 0V
C_{oss}	Output Capacitance		540			V_{DS} = 25V
C_{rss}	Reverse Transfer Capacitance		33			f = 1.0 MHz

Diode Characteristics @ T_J = 25°C (unless otherwise specified)

	Parameters	Min	Typ	Max	Units	Test Conditions
I_S	Continuous Source Current (Body Diode)			31	A	MOSFET symbol showing the integral reverse p-n junction diode 
I_{SM}	Pulsed Source Current (Body Diode) (1)			124		
V_{SD}	Diode Forward Voltage			1.5	V	T_J = 25°C, I_S = 31A, V_{GS} = 0V (4)
t_{rr}	Reverse Recovery Time		180		ns	T_J = 125°C, I_F = 31A
Q_{rr}	Reverse Recovery Charge		800		nC	di/dt = 100A/µs (4)

Avalanche Characteristics

	Parameters		Min	Typ	Max	Units
E_{AS}	Single Pulse Avalanche Energy	(2)			760	mJ
I_{AR}	Avalanche Current	(1)			31	A
E_{AR}	Repetitive Avalanche Energy	(1)			36	mJ

Notes:

(1) Repetitive rating; pulse width limited by max. junction temperature

(2) Starting T_J = 25°C, L = 4.3mH, R_G = 25Ω I_{AS} = 31A

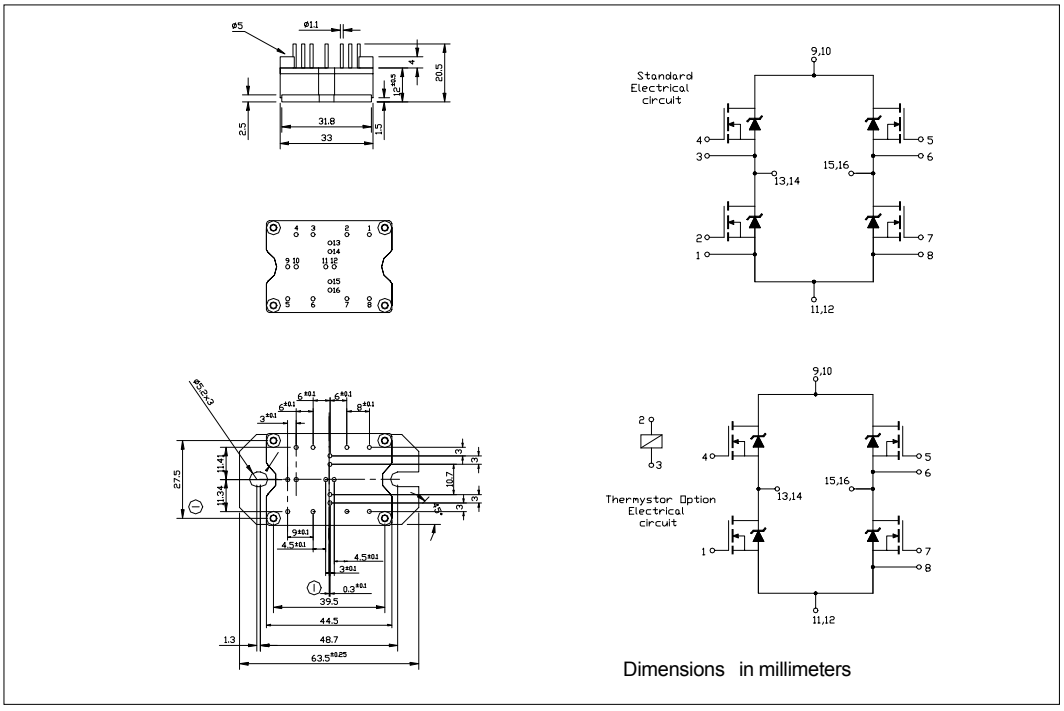
(3) I_{SD} ≤ 31A, di/dt ≤ TBD A/µs, V_{DD} ≤ $V_{(BR)DSS}$, T_J ≤ 150°C

(4) Pulse width ≤ 400µs; duty cycle ≤ 2%

Thermal- Mechanical Specifications

	Parameters	Min	Typ	Max	Units
T_J	Operating Junction Temperature Range	- 40		150	°C
T_{STG}	Storage Temperature Range	- 40		125	
R_{thJC}	Junction-to-Case			0.5	°C/ W
R_{thCS}	Case-to-Sink (Heatsink Compound Thermal Conductivity = 1 W/mK)		0.06		
	Weight		66		g

Outline Table



Data and specifications subject to change without notice.
This product has been designed for Industrial Level.
Qualification Standards can be found on IR's Web site.

International
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