

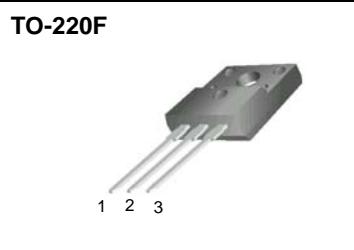
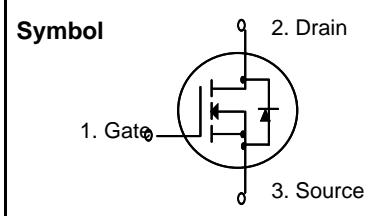


# FMF10N65 10Amps 650 Voltage N Channel MOSFET

## N-Channel MOSFET

### Features

- $R_{DS(on)}$  (Typical 0.70  $\Omega$ ) @  $V_{GS}=10V$
- Gate Charge (Typical 45nC)
- Improved dv/dt Capability, High Ruggedness
- 100% Avalanche Tested
- Maximum Junction Temperature Range (150°C)



### Absolute Maximum Ratings (\* Drain current limited by junction temperature)

Symbol	Parameter	Value	Units
$V_{DSS}$	Drain to Source Voltage	650	V
$I_D$	Continuous Drain Current(@ $T_C = 25^\circ C$ )	10*	A
	Continuous Drain Current(@ $T_C = 100^\circ C$ )	6*	A
$I_{DM}$	Drain Current Pulsed (Note 1)	40*	A
$V_{GS}$	Gate to Source Voltage	$\pm 30$	V
$E_{AS}$	Single Pulsed Avalanche Energy (Note 2)	812	mJ
$E_{AR}$	Repetitive Avalanche Energy (Note 1)	15.6	mJ
$dv/dt$	Peak Diode Recovery $dv/dt$ (Note 3)	4.5	V/ns
$P_D$	Total Power Dissipation(@ $T_C = 25^\circ C$ )	50	W
	Derating Factor above 25 °C	0.4	W/°C
$T_{STG}, T_J$	Operating Junction Temperature & Storage Temperature	- 55 ~ 150	°C
$T_L$	Maximum Lead Temperature for soldering purpose, 1/8 from Case for 5 seconds.	300	°C

### Thermal Characteristics

Symbol	Parameter	Value			Units
		Min.	Typ.	Max.	
$R_{0JC}$	Thermal Resistance, Junction-to-Case	-	-	2.5	°C/W
$R_{0JA}$	Thermal Resistance, Junction-to-Ambient	-	-	62.5	°C/W



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## Electrical Characteristics ( $T_C = 25^\circ C$ unless otherwise noted )

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
<b>Off Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	650	-	-	V
$\Delta BV_{DSS}/\Delta T_J$	Breakdown Voltage Temperature coefficient	$I_D = 250\mu A$ , referenced to $25^\circ C$	-	0.7	-	V/ $^\circ C$
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS} = 650V, V_{GS} = 0V$	-	-	10	$\mu A$
		$V_{DS} = 520V, T_C = 125^\circ C$	-	-	100	$\mu A$
$I_{GSS}$	Gate-Source Leakage, Forward	$V_{GS} = 30V, V_{DS} = 0V$	-	-	100	nA
	Gate-source Leakage, Reverse	$V_{GS} = -30V, V_{DS} = 0V$	-	-	-100	nA
<b>On Characteristics</b>						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0	-	4.0	V
$R_{DS(ON)}$	Static Drain-Source On-state Resistance	$V_{GS} = 10V, I_D = 5.0A$	-	0.70	0.85	$\Omega$
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{GS} = 0V, V_{DS} = 25V, f = 1MHz$	-	1600	-	pF
$C_{oss}$	Output Capacitance		-	170	-	
$C_{rss}$	Reverse Transfer Capacitance		-	20	-	
<b>Dynamic Characteristics</b>						
$t_{d(on)}$	Turn-on Delay Time	$V_{DD} = 325V, I_D = 10.0A, R_G = 4.7\Omega$ (Note 4, 5)	-	30	-	ns
$t_r$	Rise Time		-	70	-	
$t_{d(off)}$	Turn-off Delay Time		-	150	-	
$t_f$	Fall Time		-	80	-	
$Q_g$	Total Gate Charge	$V_{DS} = 520V, V_{GS} = 10V, I_D = 10.0A$ (Note 4, 5)	-	45	-	nC
$Q_{gs}$	Gate-Source Charge		-	7	-	
$Q_{gd}$	Gate-Drain Charge(Miller Charge)		-	20	-	

## Source-Drain Diode Ratings and Characteristics

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit.
$I_S$	Continuous Source Current	Integral Reverse p-n Junction Diode in the MOSFET	-	-	10	A
$I_{SM}$	Pulsed Source Current		-	-	40	
$V_{SD}$	Diode Forward Voltage	$I_S = 10A, V_{GS} = 0V$	-	-	1.4	V
$t_{rr}$	Reverse Recovery Time	$I_S = 10A, V_{GS} = 0V, dI_F/dt = 100A/us$	-	450	-	ns
$Q_{rr}$	Reverse Recovery Charge		-	4.5	-	

### \* NOTES

1. Repetitivity rating : pulse width limited by junction temperature
2.  $L = 15.0mH, I_{AS} = 10.0A, V_{DD} = 50V, R_G = 25\Omega, \text{Starting } T_J = 25^\circ C$
3.  $I_{SD} \leq 10.0A, di/dt \leq 200A/us, V_{DD} \leq BV_{DSS}, \text{Starting } T_J = 25^\circ C$
4. Pulse Test : Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$
5. Essentially independent of operating temperature.