MSF6N65

N-Channel Enhancement Mode Power MOSFET

Description

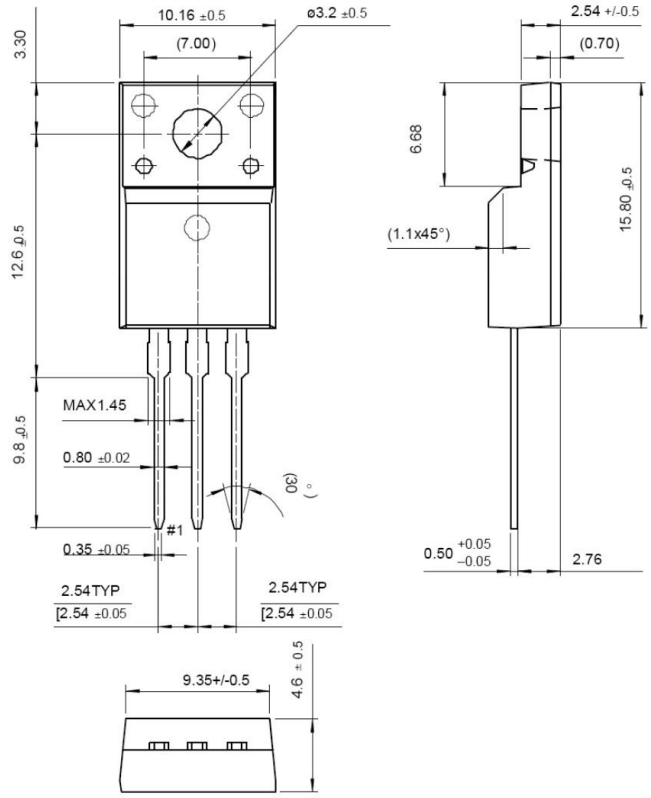
The MSF6N65 is a N-channel enhancement-mode MOSFET , providing the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost effectiveness. The TO-220F package is universally preferred for all commercial-industrial applications

Features

- Low On Resistance
- Simple Drive Requirement
- Low Gate Charge
- Fast Switching Characteristic
- RoHS compliant package

Application

- Open Framed Power Supply
- Adapter
- STB

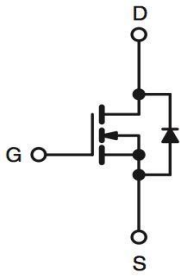


Packing & Order Information

50/Tube ; 1,000/Box

RoHS COMPLIANT

Graphic symbol



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_{DSS}	Drain-Source Voltage	650	V
V_{GS}	Gate-Source Voltage	±30	V
I_D	Drain Current -Continuous (TC=25°C)	6.0	A
	Drain Current -Continuous (TC=100°C)	3.6	A
I_{DM}	Drain Current Pulsed	24	A
I_{AR}	Avalanche Current	6.0	A
E_{AS}	Single Pulsed Avalanche Energy	135	mJ
E_{AR}	Repetitive Avalanche Energy	5.4	mJ
dv/dt	Peak Diode Recovery dv/dt	4.5	V/ns

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Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
T_L	Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	300	°C
TPKG	Maximum Temperature for Soldering @ Package Body for 10 seconds	260	°C
P_D	Total Power Dissipation (TC = 25 °C)	54	W
	Derating Factor above 25 °C	0.3	W/°C
T_{STG}	Operating and Storage Temperature Range	-55 to +150	°C
T_J	Storage Temperature	150	°C

Notes;

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. I_{AS}=7A, V_{DD}=50V, L=7mH, V_G=10V, Starting T_J=25℃
3. I_{SD}≦7A, di/dt≦200A/μs,V_{DD}≦BV_{DSS}, Starting T_J=25℃

Thermal Characteristics

Symbol	Parameter	Max.	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	2.3	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	62.5	

Static Characteristics

Symbol	Parameter	Test Conditions	Min	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V , I_D = 250μA	600	--	--	V
ΔBV_{DSS} /ΔT_J	Breakdown Voltage Temperature Coefficient	I_D = 250μA, Referenced to 25°C	--	0.65	--	V/°C
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS} , I_D = 250μA	2.0	--	4.0	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 650 V , V_{GS} = 0 V V_{DS} = 540 V , T_C = 125°C	--	--	1 10	μA
I_{GSS}	Gate-Body Leakage Forward	V_{GS} = ±30	--	--	±100	nA
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS} = 10 V , I_D = 3.0 A	--	1.23	1.5	Ω

Dynamic Characteristics

Symbol	Parameter	Test Conditions	Min	Typ.	Max.	Units
Q_g	Total Gate Charge	V_{DS} = 520 V,I_D = 6 A, V_{GS} = 10 V	--	19	--	nC
Q_{gs}	Gate-Source Charge		--	5.1	--	nC
Q_{gd}	Gate-Drain Charge		--	6.9	--	nC

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Dynamic Characteristics						
Symbol	**Parameter**	**Test Conditions**	**Min**	**Typ.**	**Max.**	**Units**
$t_{d(on)}$	Turn-On Time	V_{DS} = 325 V, I_D = 6 A, R_G = 25 Ω , V_{GS} = 10 V	--	12	--	ns
t_r	Turn-On Time		--	13	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	25	--	ns
tf	Turn-Off Fall Time		--	13	--	ns
C_{ISS}	Input Capacitance	V_{DS} = 25 V, V_{GS} = 0 V, f = 1.0MHz	--	1350	--	pF
C_{OSS}	Output Capacitance		--	120	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	26	--	pF

Source-Drain Diode						
Symbol	**Parameter**	**Test Conditions**	**Min**	**Typ.**	**Max.**	**Units**
I_S		V_D = V_G = 0 V_S = 1.3 V	--	--	6.0	A
I_{SM}			--	--	24	
V_{SD}		I_S = 6 A , V_{GS} = 0 V	--	--	1.5	V
t_{rr}		I_F = 6 A , V_{GS} = 0 V diF/dt=100A/μs	--	330	--	ns
Q_{rr}			--	2.8	--	μC

Notes;

1. Pulse Test: Pulse Width ≦ 300μs, Duty Cycle≦ 2%

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