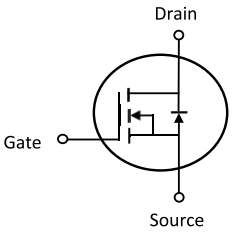
N Channel MOSFET

multicomp PRO

RoHS Compliant

Device Schematic



Applications

- High Efficiency Switch Mode Power Supplies
- Electronic Lamp Ballasts Based on Half Bridge
- LED Power Supplies

Features

- $R_{DS(ON)}$ = 1.2Ω @ V_{GS} = 10V
- Ultra Low Gate Charge
- Low Reverse Transfer Capacitance
- Fast Switching Capability
- Avalanche Energy Tested
- Improved dv/dt Capability, High Ruggedness

Maximum Ratings @TA = +25°C

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	±30	
Avalanche Current (Note 2.)	I_{AR}	7	A
Continuous Drain Current	I_D	7	
Pulsed Drain Current (Note 2.)	I_{DM}	29.6	
Single Pulsed Avalanche Energy (Note 3.)	E_{AS}	530	mJ
Repetitive Avalanche Energy (Note 2.)	E_{AR}	14.2	
Peak Diode Recovery dv/dt (Note 4.)	dv/dt	4.5	V/ns
Power Dissipation	P_D	48	W
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	

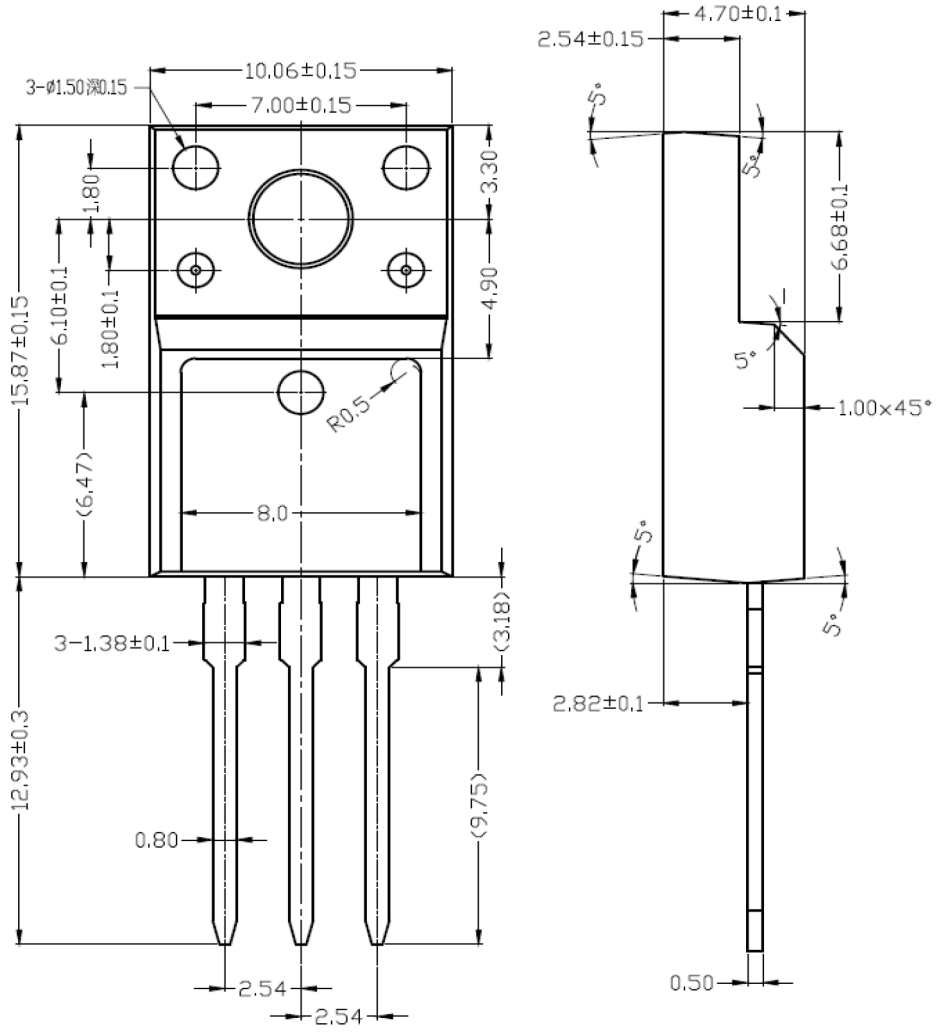
Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.
2. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
3. L = 19.5mH, I_{AS} = 4A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25°C
4. I_{SD} ≤ 7A, di/dt ≤ 200A/µs, V_{DD} ≤ BV_{DSS}, Starting T_J = 25°C

Electrical Characteristics @TA = +25°C

Parameter	Test Conditions	Symbol	Min.	Typ.	Max.	Unit
OFF Characteristics						
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	V_{DSS}	650		--	V
Forward Gate-Source Leakage Current	V_{DS}=0V, V_{GS}=30V	I_{GSS}	--	--	100	nA
Reverse Gate-Source Leakage Current	V_{DS}=0V, V_{GS}=-30V		--		-100	
Drain-Source Leakage Current	V_{DS}=650V, V_{GS}=0V	I_{DSS}	--		1	μA
Breakdown Voltage Temperature Coefficient	ID=250 μA,Referenced to 25μ	$\Delta BV_{DSS}/\Delta T_J$	--	0.67	--	
ON Characteristics						
Gate-Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	$V_{th(GS)}$	2	--	4	V
Static Drain-Source On-State Resistance	V_{GS}=10V, I_D= 3.5A	$R_{DS(ON)}$	--	0.94	1.2	Ω
Dynamic Characteristics						
Input Capacitance	V_{DS}=25V, V_{GS}=0V, F=1MHz	C_{ISS}	-	--	1400	pF
Output Capacitance		C_{OSS}	-	--	018	
Reverse Transfer Capacitance		C_{RSS}	-	16	21	
Switching Characteristics						
Turn-On Delay Time	V_{DD}=325V, V_{GS}=7.4A, R_G=25Ω, (Note 1,2)	$t_{D(ON)}$	-	--	70	ns
Turn-On Rise Time		t_R			170	
Turn-Off Delay Time		$t_{D(OFF)}$			140	
Turn-Off Fall Time		t_F			130	
Switching Characteristics						
Total Gate Charge	V_{DS}=520V, I_D=7A, V_{GS}=10V (Note 1,2)	Q_G	--	29	38	nC
Gate-Source Charge		Q_{GS}		7	--	
Gate-Drain Charge		Q_{GD}		14.5	--	
Drain-Source Diode Characteristics And Maximum Ratings						
Drain-Source Diode Forward Volta	I_S=7A, V_{GS}=0V	V_{SD}	-	--	1.4	V
Maximum Continuous Drain-Source Diode Forward Current		I_S		--	7	A
Maximum Pulsed Drain-Source Diode Forward Current		I_{SM}		--	29.6	
Reverse Recovery Time	V_{GS}=0V, I_S=7A, dI_F/dt=-100A/μs (Note 1)	t_{RR}		320	--	ns
Reverse Recovery Charge		Q_{RR}		2.4	--	μC
Notes:1. Pulse Test:Pulse Width ≤300us,Duty Cycle≤2%. 2. Essentially independent of operating temperature						

Dimensions : Millimetres

Outline Dimensions



Part Number Table

Description	Part Number
N Channel MOSFET, 650V, 7A, TO-220F	HMF07N65S