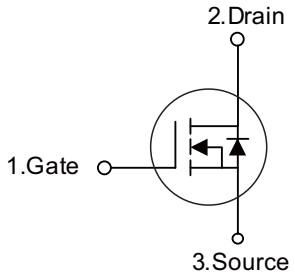
■ PRODUCT CHARACTERISTICS

VDSS	450V
R_{DS}(on)Typ(@V_{GS} =10 V)	0.49Ω
Qg@type	43nC
ID	11A

Symbol

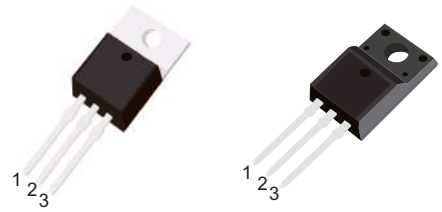


■ APPLICATIONS

* High frequency switching mode power supply
* Electronic ballast
* LED power supply

■ FEATURES

* Ultra low gate charge
* Low reverse transfer capacitance
* Fast switching capability
* Avalanche energy specified
* Improved dv/dt capability, high ruggedness



TO-220 TO-220F

■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT4511AF	TO-220F	50 pieces/Tube
N/A	MOT4511AA	TO-220	50 pieces/Tube

■ ABSOLUTE MAXIMUM RATINGS (T_C = 25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain to Source Voltage		V_{DSS}	450	V
Gate to Source Voltage		V_{GSS}	±30	V
Continuous Drain Current	T_C=25°C	I_D	11 (Note 2)	A
	T_C=100°C		7 (Note 2)	A
Pulsed Drain Current (Note 3)		I_{DM}	44 (Note 2)	A
Single Pulsed Avalanche Energy(Note 4)		E_{AS}	675	mJ
Peak Diode Recovery dv/dt (Note 5		dv/dt	4.5	V/ns
Power Dissipation	TO-220	P_D	195	W
	TO-220F		48	
Junction Temperature		T_J	+150	°C
Storage Temperature		T_{STG}	-55 ~ +150	°C

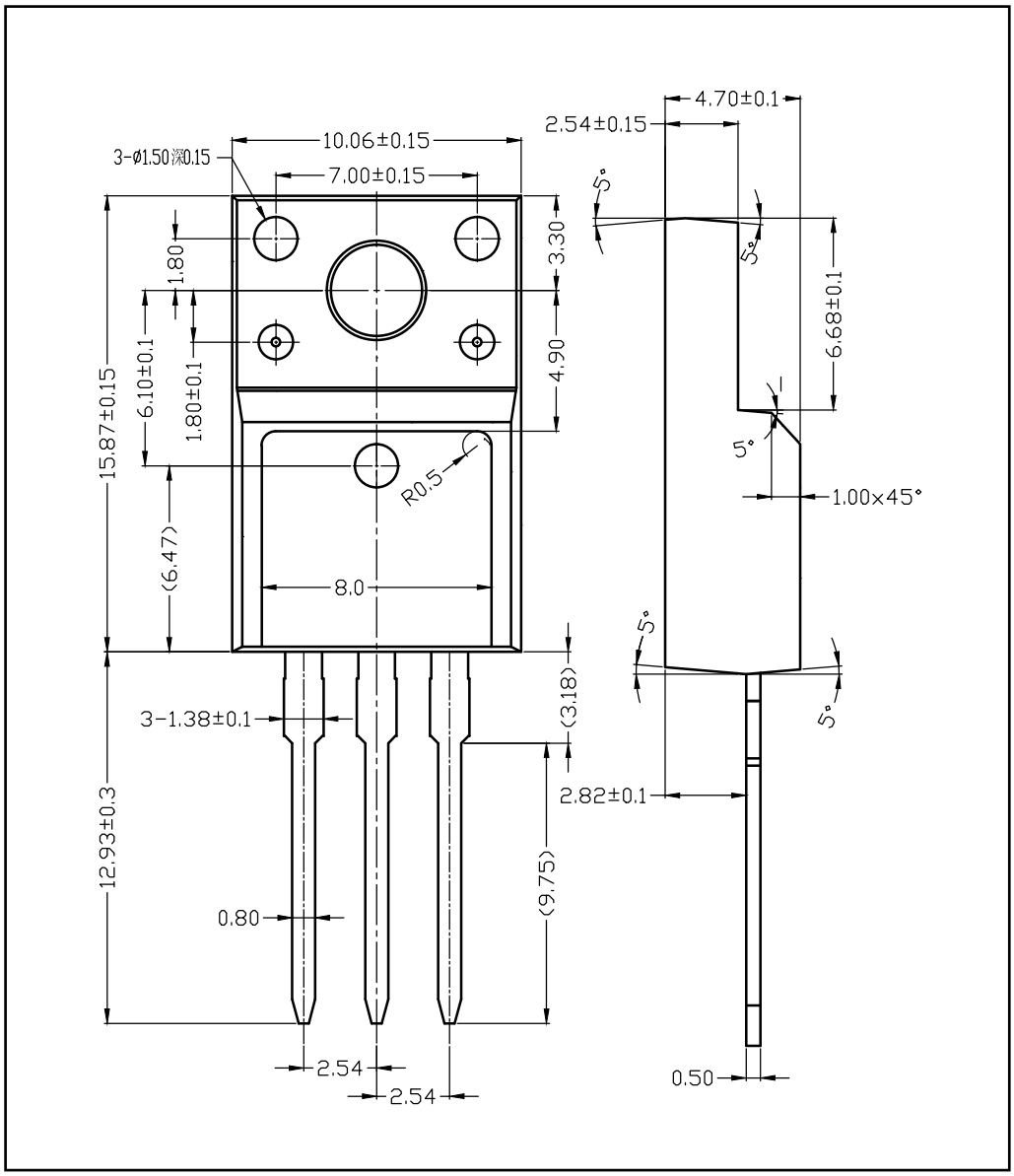
Note: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2. Drain current limited by maximum junction temperature
3. Repetitive Rating : Pulse width limited by maximum junction temperature
4. L=10mH, I_{AS}=11A, V_{DD}= 50V, R_G=25Ω, Starting T_J=25°C
5. I_{SD} ≤11A, di/dt ≤200A/μs, V_{DD} ≤BV_{DSS}, Starting T_J=25°C

■ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise specified)

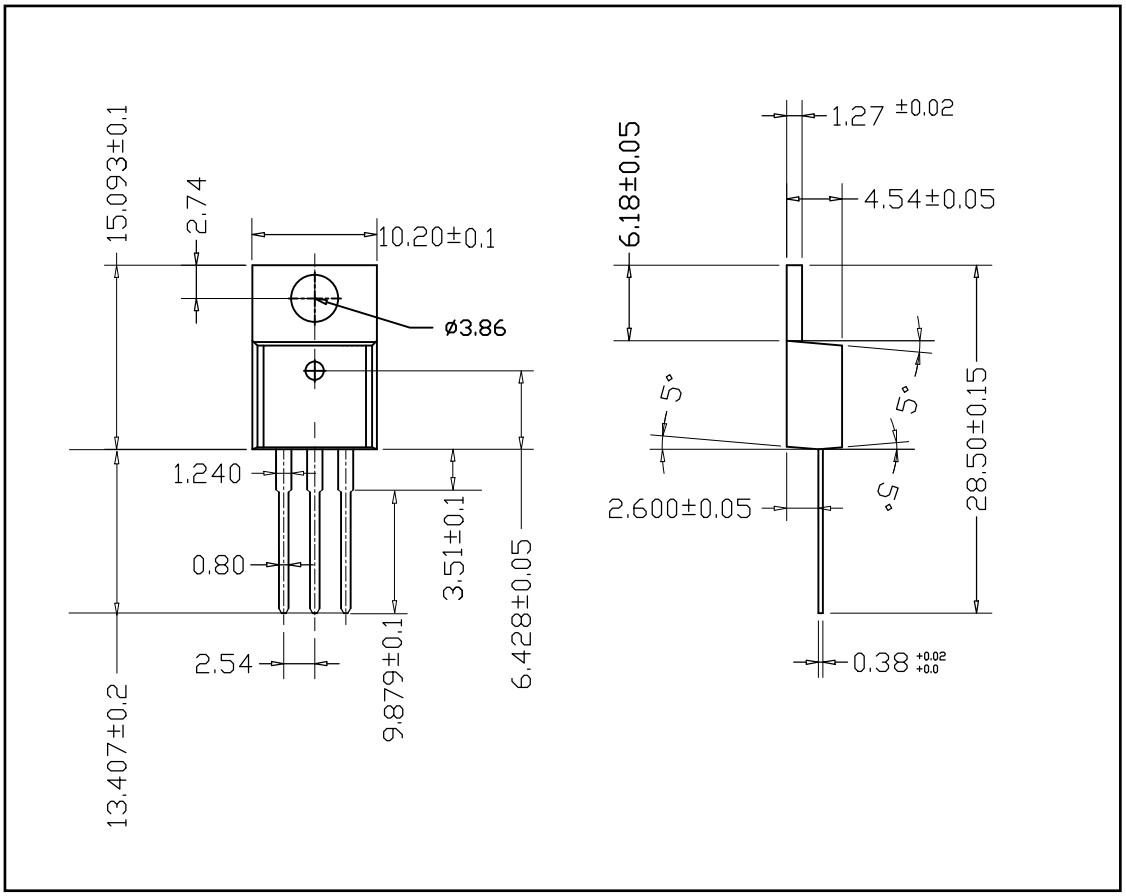
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Off characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250uA	450	-	-	V
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	I_D=250μA,Referenced to 25°C	-	0.5	-	V/°C
Drain-Source Leakage Current	I_{DSS}	V_{DS}=450V, V_{GS}=0V	-	-	10	μA
		V_{DS}=450V, T_J=125°C	-	-	100	μA
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V ,V_{GS}=±30V	-	-	±100	nA
On characteristics						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}= V_{GS}, I_D=250μA	2.0	-	4.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=5.5A	-	0.49	0.55	Ω
Dynamic characteristics						
Input Capacitance	C_{ISS}	V_{DS}=25V,V_{GS}=0V,f=1.0MHz	-	1515	-	pF
Output Capacitance	C_{OSS}		-	185	-	pF
Reverse Transfer Capacitance	C_{RSS}		-	25	-	pF
Switching characteristics						
Total Gate Charge	Q_G	V_{DS}=360V, V_{GS}=10V, I_D=11A (Note 1, 2)	-	43	-	nC
Gate-Source Charge	Q_{GS}		-	8	-	nC
Gate-Drain Charge	Q_{GD}		-	19	-	nC
Turn-ON Delay Time	$t_{D(ON)}$	V_{DD}=250V, I_D=11A, R_G=3Ω (Note 1, 2)	-	24	-	ns
Turn-ON Rise Time	t_R		-	70	-	ns
Turn-OFF Delay Time	$t_{D(OFF)}$		-	120	-	ns
Turn-OFF Fall Time	t_F		-	75	-	ns
Source-drain diode ratings and characteristics						
Maximum Body-Diode Continuous Current	I_S		-	-	11	A
Maximum Body-Diode Pulsed Current	I_{SM}		-	-	44	A
Drain-Source Diode Forward Voltage	V_{SD}	I_S=11A, V_{GS}=0V	-	-	1.4	V
Body Diode Reverse Recovery Time	t_{rr}	V_{GS}=0V, I_S=11A, dI_F/dt=100A/μs (Note 1)	-	90	-	ns
Body Diode Reverse Recovery Charge	Q_{RR}		-	1.5	-	μC

Note: 1. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%
2. Essentially independent of operating temperature

■ TO-220F-3L PACKAGE OUTLINE DIMENSIONS



■ TO-220-3L PACKAGE OUTLINE DIMENSIONS



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