

■ PRODUCT CHARACTERISTICS

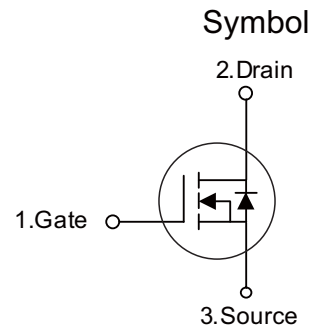
VDSS	450V
$R_{DS(on)}$ typ.(@ $V_{GS}=10V$)	0.45Ω
Qg@type	55nC
ID	12A

■ APPLICATIONS

- * High efficiency switch mode power supplies
- * Electronic lamp ballasts based on half bridge

■ FEATURES

- * High Switching Speed
- * 100% Avalanche Tested



■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT4512F	TO-220F	50 pieces/Tube
N/A	MOT4512A	TO-220	50 pieces/Tube

■ ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$, 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	I_D	$T_C=25^\circ\text{C}$	12 (Note 2)
		$T_C=100^\circ\text{C}$	8 (Note 2)
Pulsed Drain Current (Note 3)	I_{DM}	48 (Note 2)	A
Single Pulsed Avalanche Energy(Note 4)	E_{AS}	670	mJ
Peak Diode Recovery dv/dt (Note 5)	dv/dt	4.5	V/ns
Power Dissipation	P_D	TO-220	195
		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.

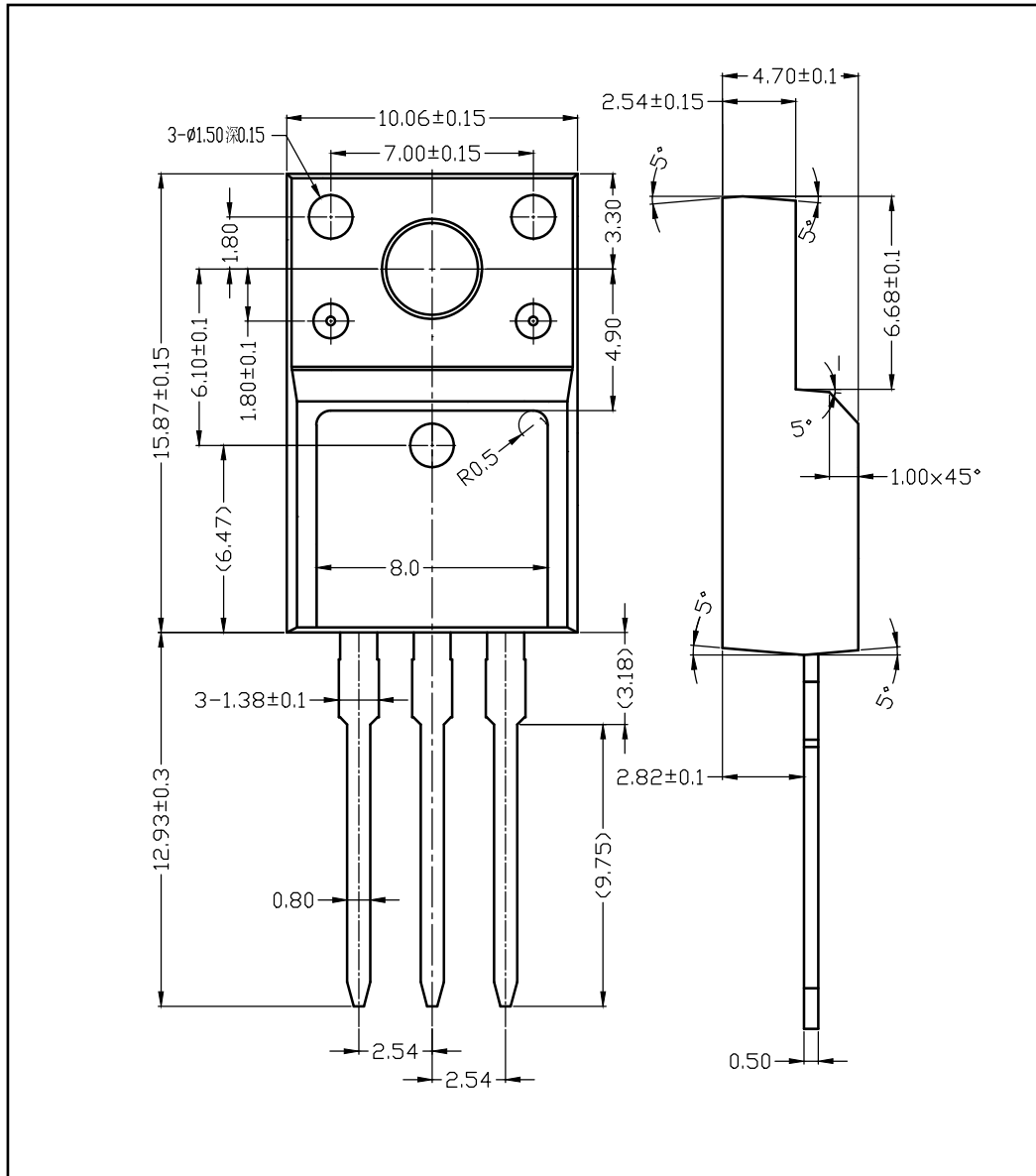
2. Drain current limited by maximum junction temperature
3. Repetitive Rating : Pulse width limited by maximum junction temperature
4. $L=10\text{mH}$, $I_{AS}=11\text{A}$, $V_{DD}=50\text{V}$, $R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$
5. $I_{SD} \leq 12\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J=25^\circ\text{C}$

■ ELECTRICAL CHARACTERISTICS ($T_C=25^\circ\text{C}$, unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Off characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	450	-	-	V
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	$I_D=250\mu A$, Referenced to 25°C	-	0.5	-	$V/^\circ\text{C}$
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=450V, V_{GS}=0V$	-	-	10	μA
		$V_{DS}=450V, T_J=125^\circ\text{C}$	-	-	100	μA
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 30V$	-	-	± 100	nA
On characteristics						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	-	4.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=6A$	-	0.45	0.5	Ω
Dynamic characteristics						
Input Capacitance	C_{ISS}	$V_{DS}=25V, V_{GS}=0V, f=1.0\text{MHz}$	-	1515		pF
Output Capacitance	C_{OSS}		-	185		pF
Reverse Transfer Capacitance	C_{RSS}		-	25		pF
Switching characteristics						
Total Gate Charge	Q_G	$V_{DS}=360V, V_{GS}=10V, I_D=12A$ (Note 1, 2)	-	43		nC
Gate-Source Charge	Q_{GS}		-	8		nC
Gate-Drain Charge	Q_{GD}		-	19		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=250V, I_D=12A, R_G=3\Omega$ (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}	$I_S=12A, V_{GS}=0V$	-		1.4	V
Body Diode Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_S=12A,$	-	90		ns
Body Diode Reverse Recovery Charge	Q_{RR}	$dI_F/dt=100A/\mu s$ (Note 1)	-	1.5		μC

Note: 1. Pulse Test : Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$
 2. Essentially independent of operating temperature

■ TO-220F PACKAGE OUTLINE DIMENSIONS



■ TO-220 PACKAGE OUTLINE DIMENSIONS

