

■ PRODUCT CHARACTERISTICS

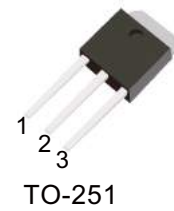
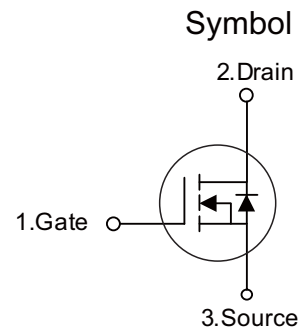
VDSS	500V
$R_{DS(on)typ}(V_{GS}=10V)$	1.2Ω
Qg@type	18nC
ID	5A

■ APPLICATIONS

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

■ FEATURES

- \* Fast Switching Capability
- \* Avalanche Energy Specified
- \* Improved dv/dt Capability, High Ruggedness



■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT5N50D	TO-252	2500 pieces /Reel
N/A	MOT5N50C	TO-251	70 pieces/Tube

■ ABSOLUTE MAXIMUM RATINGS ( $T_C = 25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT	
Drain-Source Voltage	$V_{DSS}$	500	V	
Gate-Source Voltage	$V_{GSS}$	±30	V	
Drain Current	Continuous	$I_D$	5	A
	Pulsed (Note 2)	$I_{DM}$	10	A
Avalanche Energy	Single Pulsed (Note 3)	$E_{AS}$	151	mJ
Peak Diode Recovery dv/dt (Note 4)	dv/dt	4.5	V/ns	
Power Dissipation	$P_D$	50	W	
Junction Temperature	$T_J$	+150	°C	
Storage Temperature	$T_{STG}$	-55~+150	°C	

Notes: 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. Repetitive Rating: Pulse width limited by maximum junction temperature.

3.  $L = 10\text{mH}$ ,  $I_{AS} = 5.5\text{A}$ ,  $V_{DD} = 50\text{V}$ ,  $R_G = 25\ \Omega$  Starting  $T_J = 25^\circ\text{C}$

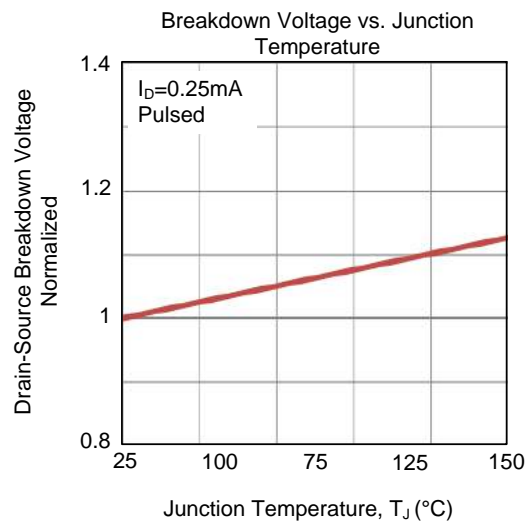
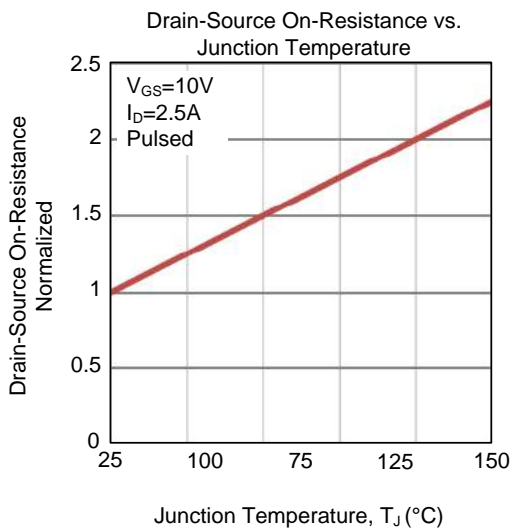
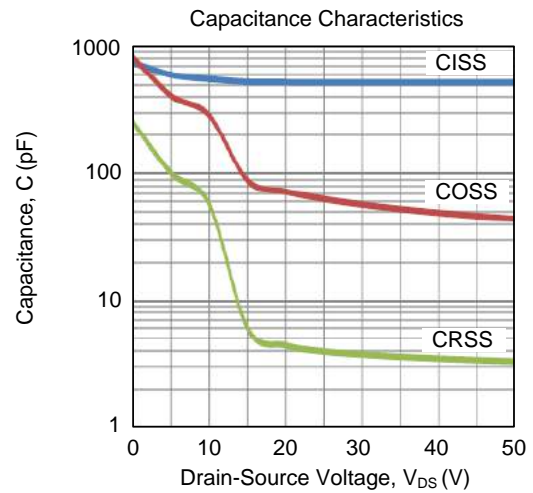
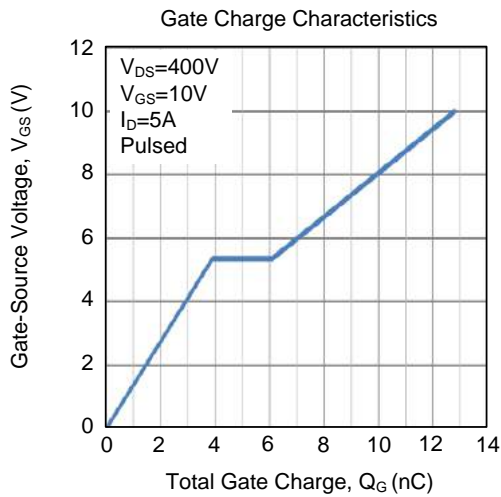
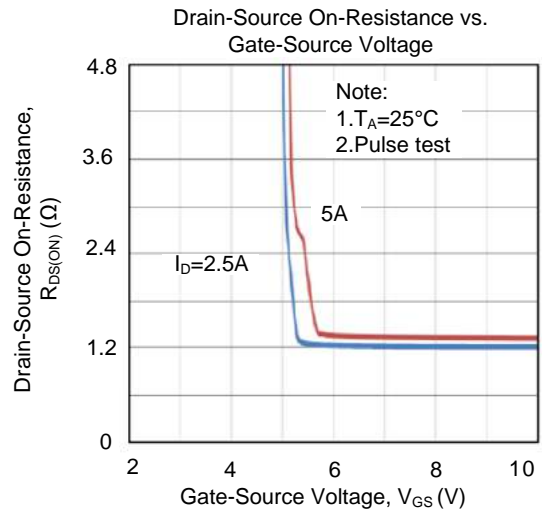
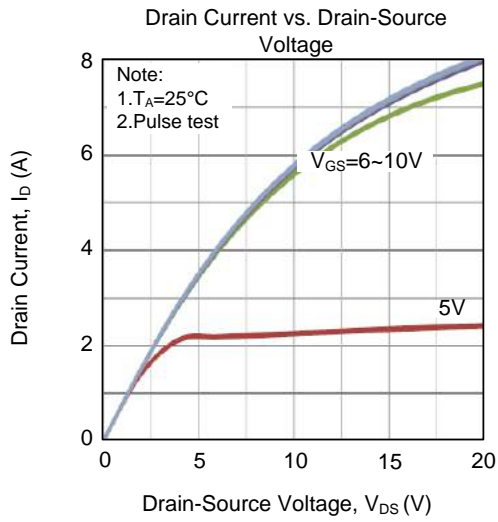
4.  $I_{SD} \leq 5.0\text{A}$ ,  $di/dt \leq 100\text{A}/\mu\text{s}$ ,  $V_{DD} \leq BV_{DSS}$ , Starting  $T_J = 25^\circ\text{C}$

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

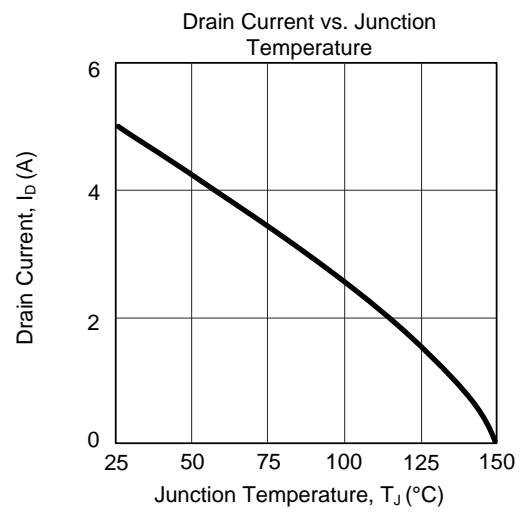
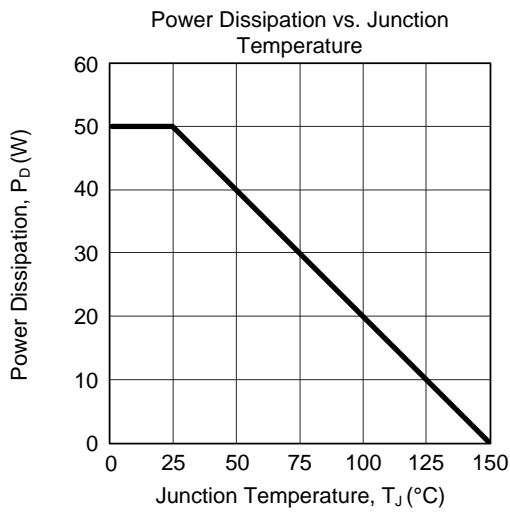
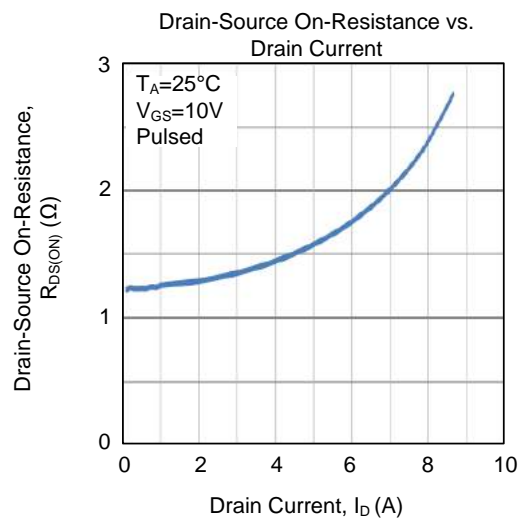
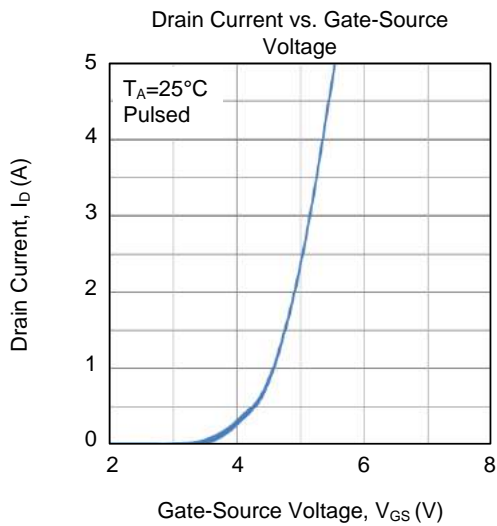
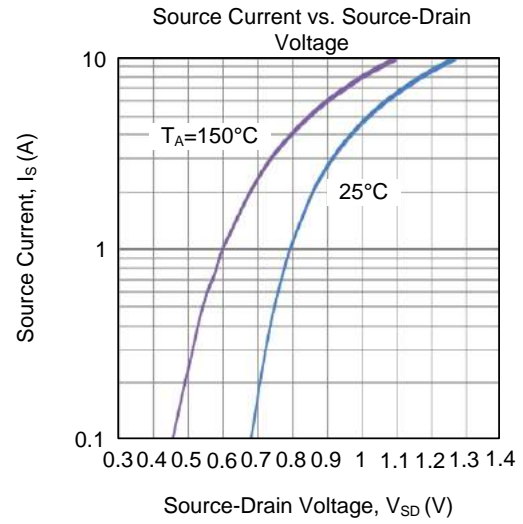
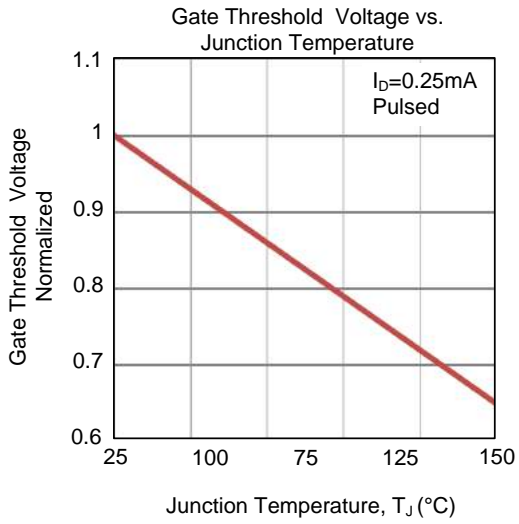
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	500	-	-	V
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to $25^\circ\text{C}$ , $I_D=250\mu\text{A}$	-	0.5	-	$\text{V}/^\circ\text{C}$
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=500\text{V}, V_{GS}=0\text{V}$	-	-	1	$\mu\text{A}$
		$V_{DS}=400\text{V}, T_C=125^\circ\text{C}$	-	-	10	
Gate- Source Leakage Current	Forward	$V_{GS}=30\text{V}, V_{DS}=0\text{V}$	-	-	100	nA
	Reverse	$V_{GS}=-30\text{V}, V_{DS}=0\text{V}$	-	-	-100	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	2.0	-	4.0	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}, I_D=2.5\text{A}$	-	1.2	1.5	$\Omega$
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0\text{V}, V_{DS}=25\text{V},$ $f=1.0\text{MHz}$	-	625	-	pF
Output Capacitance	$C_{OSS}$		-	80	-	pF
Reverse Transfer Capacitance	$C_{RSS}$		-	15	-	pF
<b>SWITCHING CHARACTERISTICS</b>						
Total Gate Charge	$Q_G$	$V_{GS}=10\text{V}, V_{DS}=400\text{V},$ $I_D=5\text{A}$ (Note 1, 2)	-	18	-	nC
Gate to Source Charge	$Q_{GS}$		-	2.2	-	nC
Gate to Drain Charge	$Q_{GD}$		-	9.7	-	nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=250\text{V}, I_D=5\text{A},$ $R_G=25\Omega$ (Note 1, 2)	-	12	-	ns
Rise Time	$t_R$		-	46	-	ns
Turn-OFF Delay Time	$t_{D(OFF)}$		-	50	-	ns
Fall-Time	$t_F$		-	48	-	ns
<b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Maximum Continuous Drain-Source Diode Forward Current	$I_S$		-	-	5	A
Maximum Pulsed Drain-Source Diode Forward Current	$I_{SM}$		-	-	20	A
Drain-Source Diode Forward Voltage	$V_{SD}$	$I_S=5\text{A}, V_{GS}=0\text{V}$	-	-	1.4	V
Reverse Recovery Time	$t_{rr}$	$I_S=5\text{A}, V_{GS}=0\text{V},$	-	240	-	ns
Reverse Recovery Charge	$Q_{RR}$	$di_F/dt=100\text{A}/\mu\text{s}$ (Note 1)	-	0.25	-	$\mu\text{C}$

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

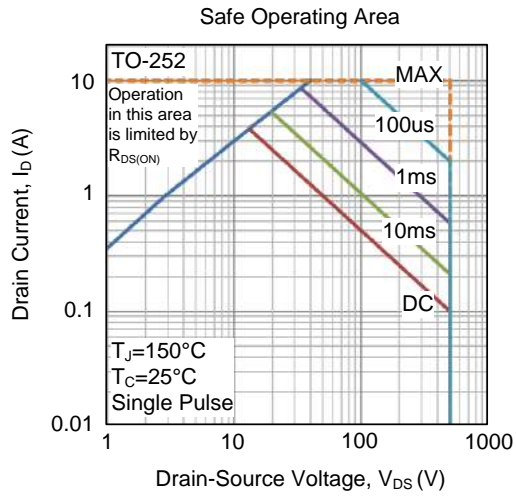
■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)

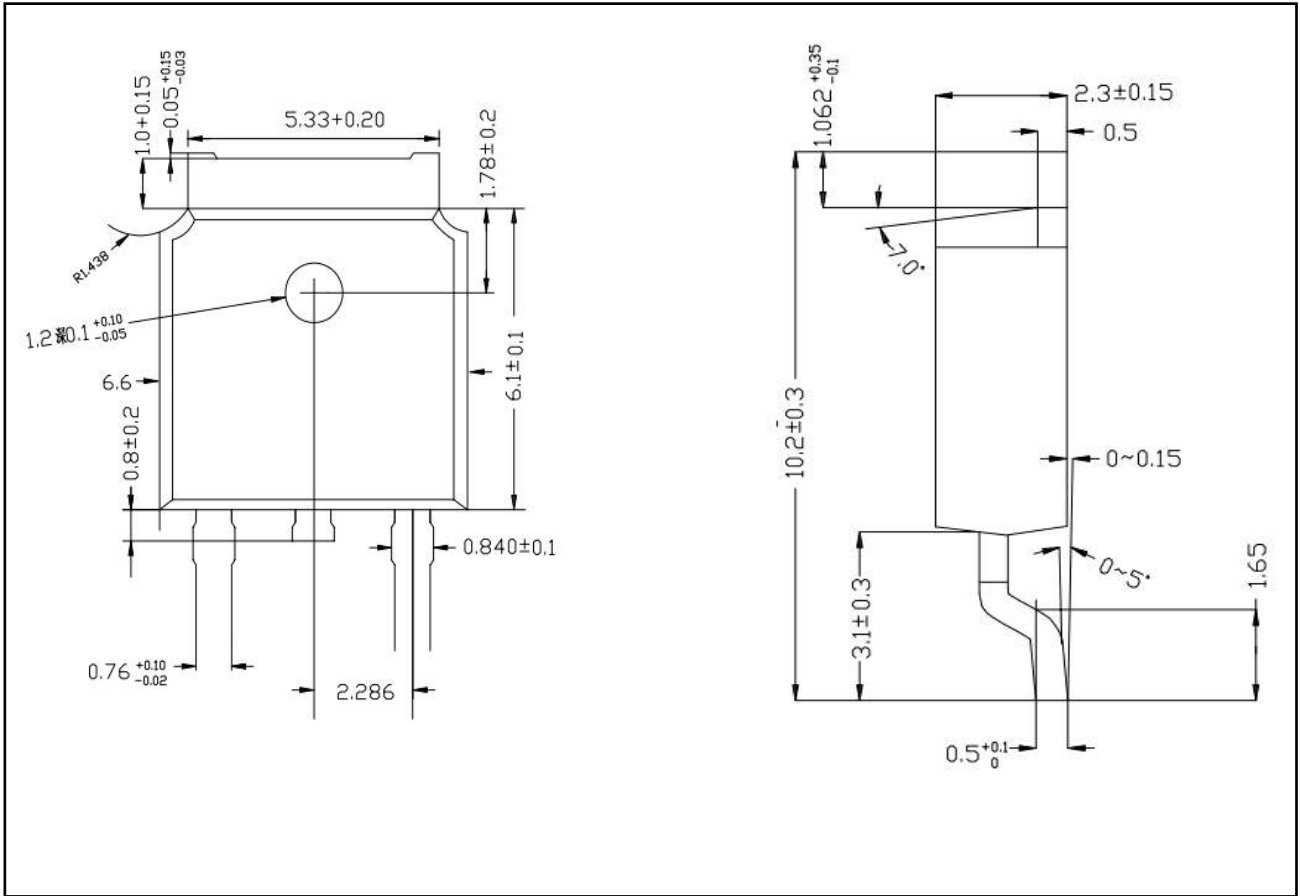


■ TYPICAL CHARACTERISTICS(Cont.)





■ TO-252 PACKAGE OUTLINE DIMENSIONS



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