

■ PRODUCT CHARACTERISTICS

VDSS	500V
$R_{DS(on)typ}(V_{GS}=10V)$	2.4Ω
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

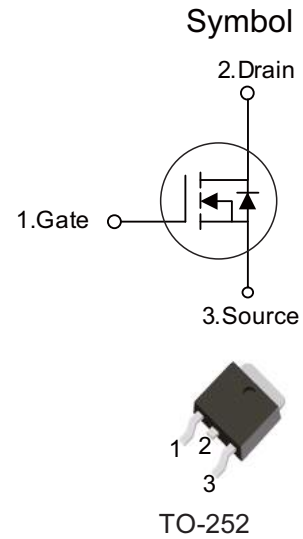
Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT5N50BD	TO-252	2500 pieces /Reel

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

PARAMETER	SYMBOL	RATINGS	UNIT	
Drain-Source Voltage	$V_{DS}$	500	V	
Gate-Source Voltage	$V_{GS}$	±30	V	
Drain Current	Continuous	$I_D$	5	A
	Pulse	$I_{DM}$	15	A
Avalanche Energy	Single Pulsed	$E_{AS}$	60	mJ
Power Dissipation	$P_D$	32.9	W	
Junction Temperature	$T_J$	+150	°C	
Storage Temperature	$T_{STG}$	-55~+150	°C	

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	$\theta_{JA}$	62.5	°C/W
Junction to Case	$\theta_{JC}$	6.25	°C/W

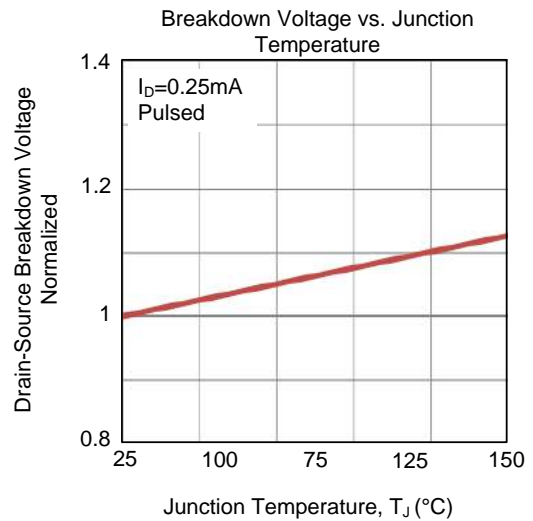
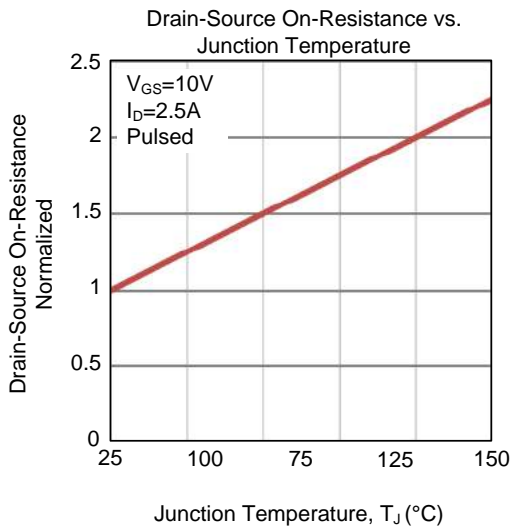
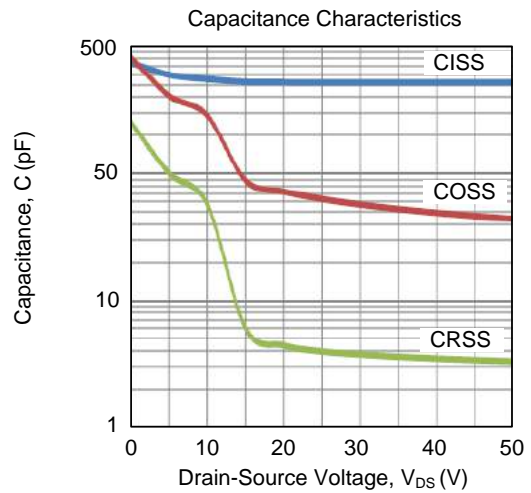
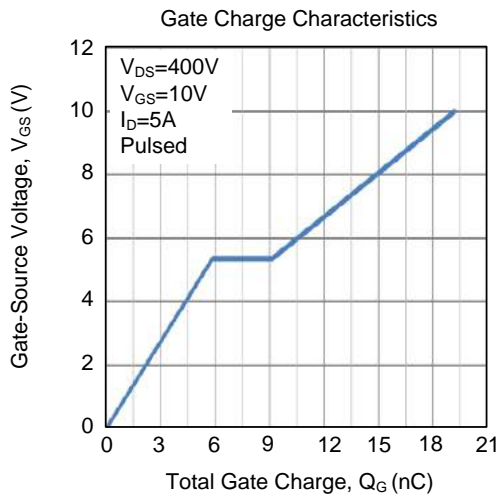
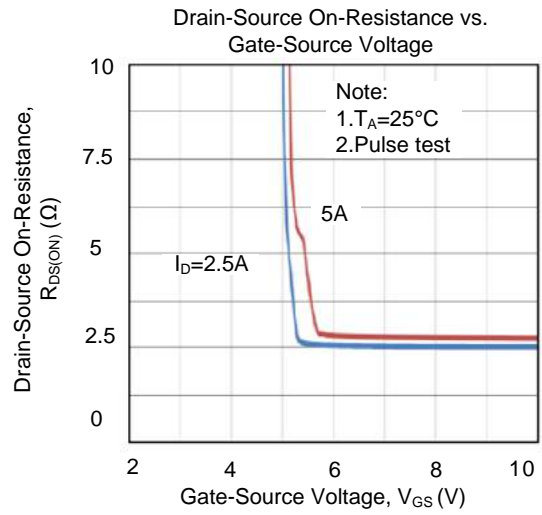
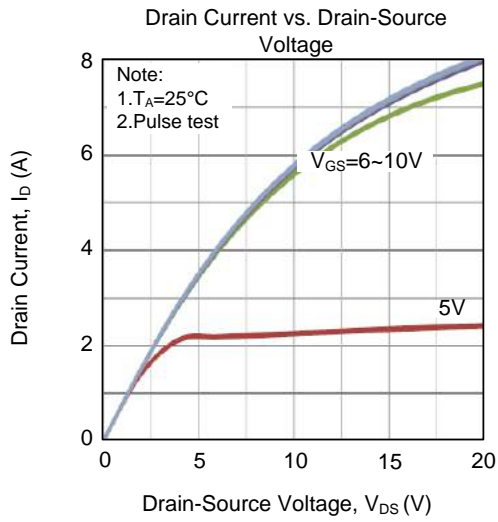


■ ELECTRICAL CHARACTERISTICS ( $T_c = 25^\circ\text{C}$ , unless otherwise specified)

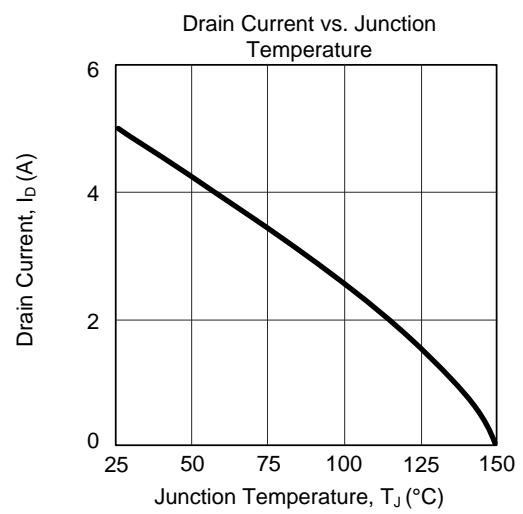
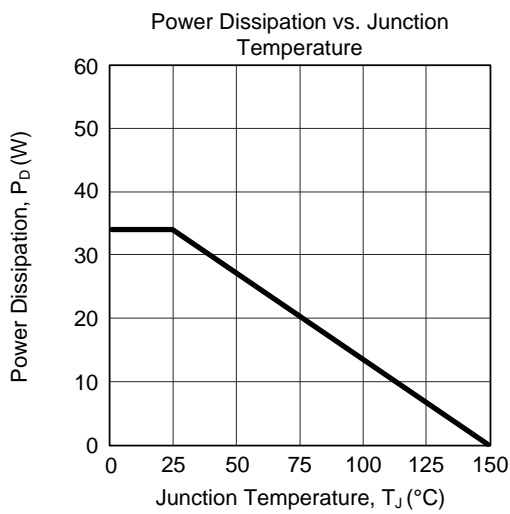
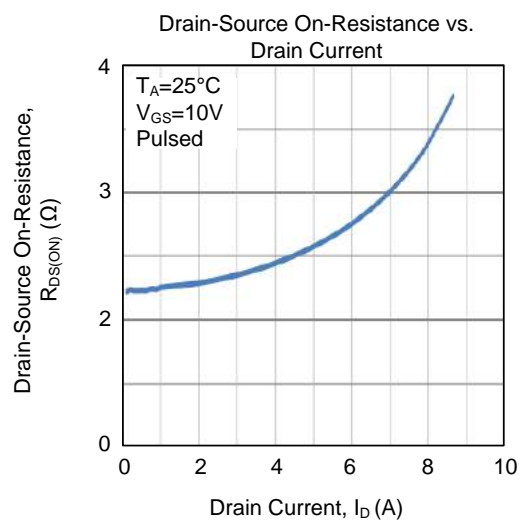
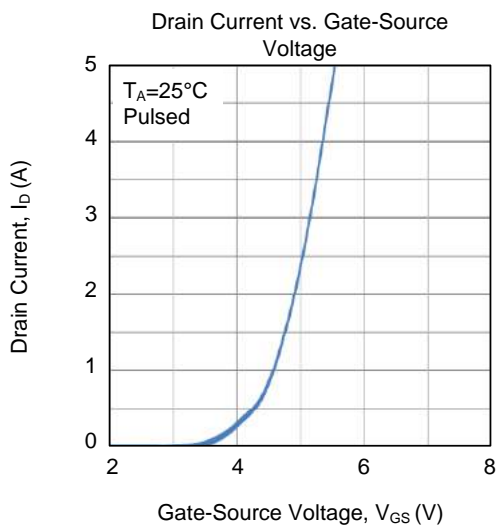
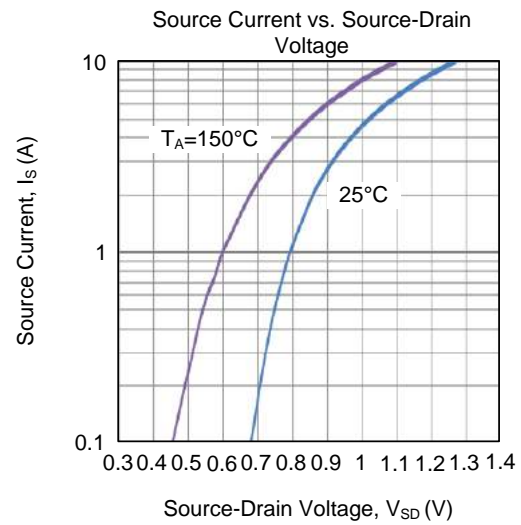
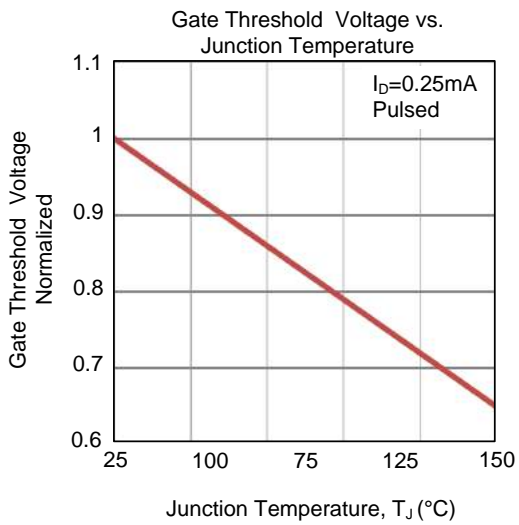
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	500	-	-	V
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to $25^\circ\text{C}$ , $I_D=250\mu\text{A}$	-	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	$R_{DS(ON)}$	$V_{GS}=10\text{V}, I_D=2.5\text{A}$	-	2.4	3.2	$\Omega$
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0\text{V}, V_{DS}=25\text{V},$ $f=1.0\text{MHz}$	-	320	-	pF
Output Capacitance	$C_{OSS}$		-	40	-	pF
Reverse Transfer Capacitance	$C_{RSS}$		-	8	-	pF
<b>SWITCHING CHARACTERISTICS</b>						
Total Gate Charge	$Q_G$	$V_{GS}=10\text{V}, V_{DS}=400\text{V},$ $I_D=5\text{A}$	-	18	-	nC
Gate to Source Charge	$Q_{GS}$		-	2.2	-	nC
Gate to Drain Charge	$Q_{GD}$		-	9.7	-	nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=250\text{V}, I_D=5\text{A},$ $R_G=25\Omega$	-	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	$I_{SM}$		-	-	15	A
Drain-Source Diode Forward Voltage	$V_{SD}$	$I_S=5\text{A}, V_{GS}=0\text{V}$	-	-	1.4	V
Reverse Recovery Time	$t_{rr}$	$I_S=5\text{A}, V_{GS}=0\text{V},$	-	193	-	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 300 $\mu\text{s}$ , Duty cycle 2%

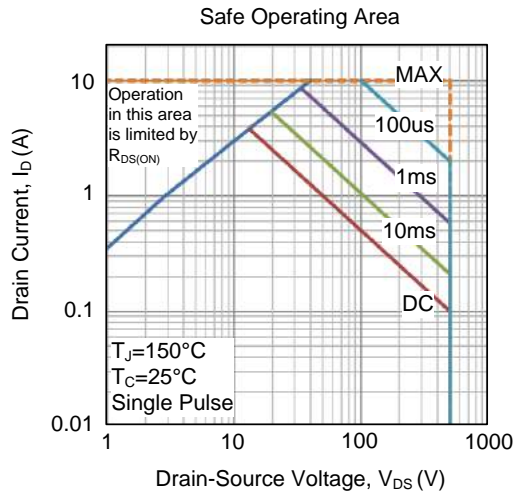
■ TYPICAL CHARACTERISTICS



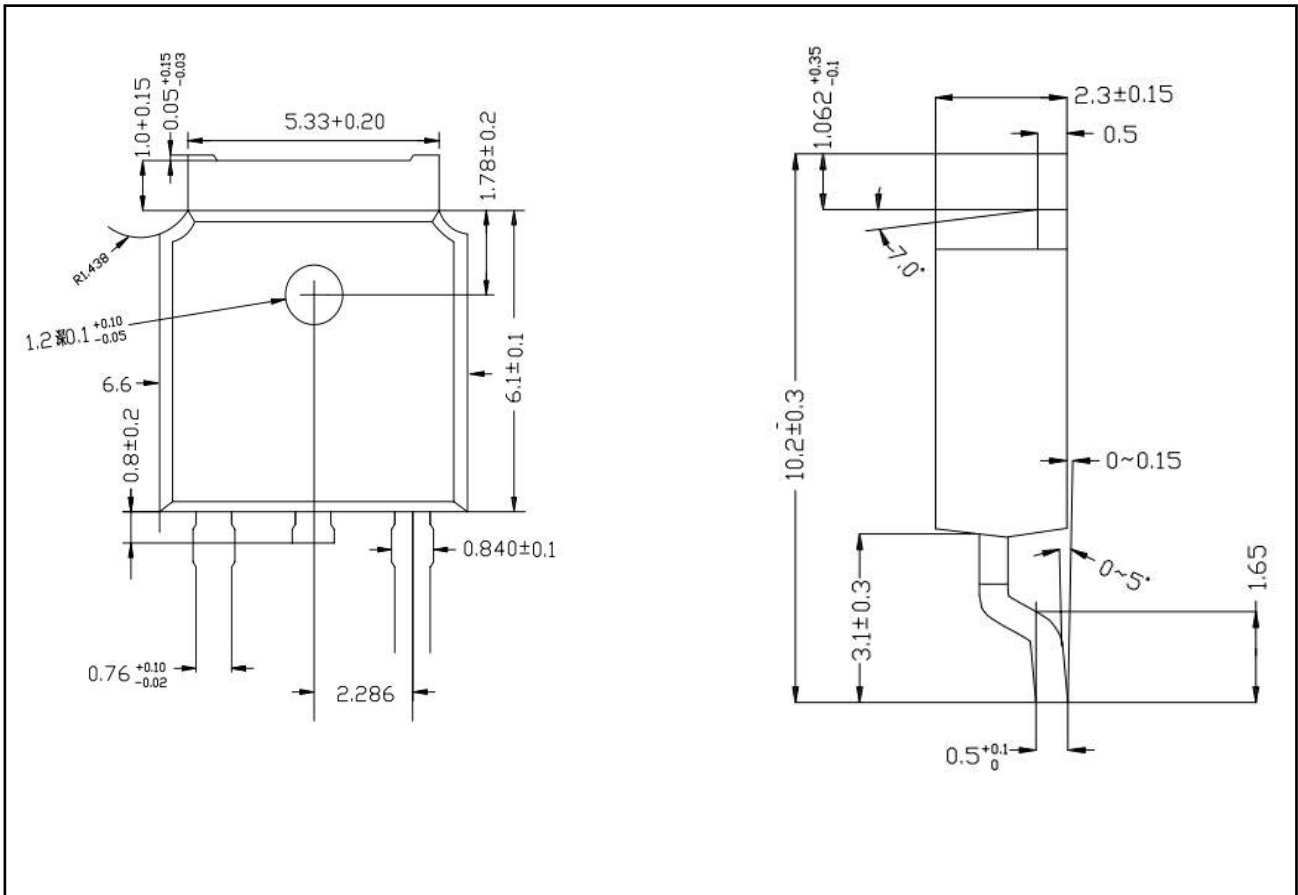
■ TYPICAL CHARACTERISTICS(Cont.)



■ TYPICAL CHARACTERISTICS(Cont.)



■ TO-252 PACKAGE OUTLINE DIMENSIONS



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