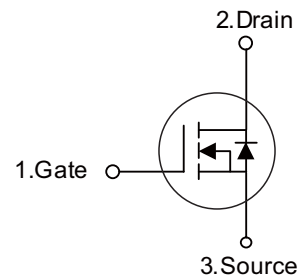


■ PRODUCT CHARACTERISTICS

VDSS	500V
$R_{DS(on)typ}(V_{GS}=10V)$	1.3Ω
Qg@type	14nC
ID	6A

Symbol

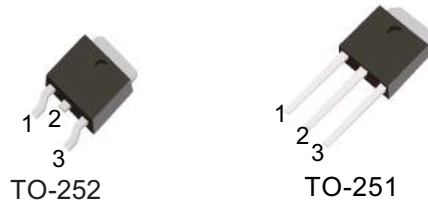


■ APPLICATIONS

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

■ FEATURES

- * Fast Switching
- * With 100% Avalanche Tested



■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT6N50SC	TO-251	70 pieces/Tube
N/A	MOT6N50SD	TO-252	2500 pieces/Reel

■ 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	6
	Pulsed (Note 2)	I_{DM}	12
Avalanche Energy	Single Pulsed (Note 3)	E_{AS}	156
Peak Diode Recovery dv/dt (Note 4)	dv/dt	4.2	V/ns
Power Dissipation	P_D	56	W
Junction Temperature	T_J	+150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

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. $L = 10\text{mH}$, $I_{AS} = 5.6\text{A}$, $V_{DD} = 50\text{V}$, $R_G = 25\ \Omega$ Starting $T_J = 25^\circ\text{C}$

4. $I_{SD} \leq 6.0\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J = 25^\circ\text{C}$

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	110	$^\circ\text{C}/\text{W}$
Junction to Case	θ_{JC}	2.23	$^\circ\text{C}/\text{W}$

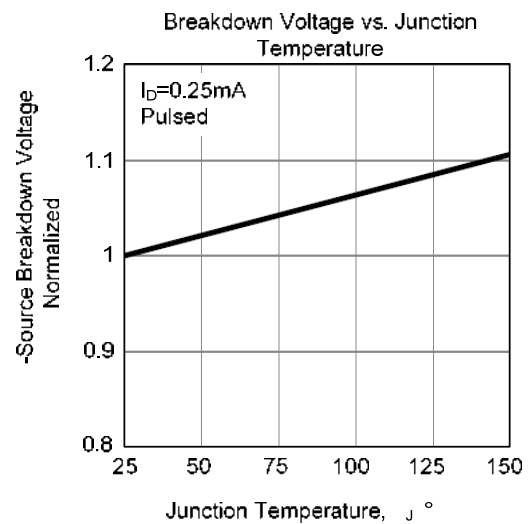
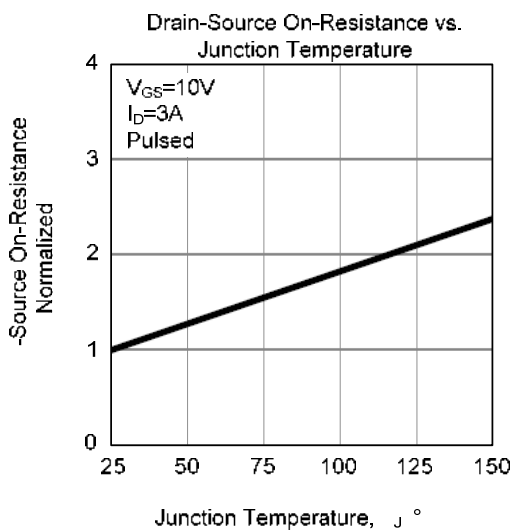
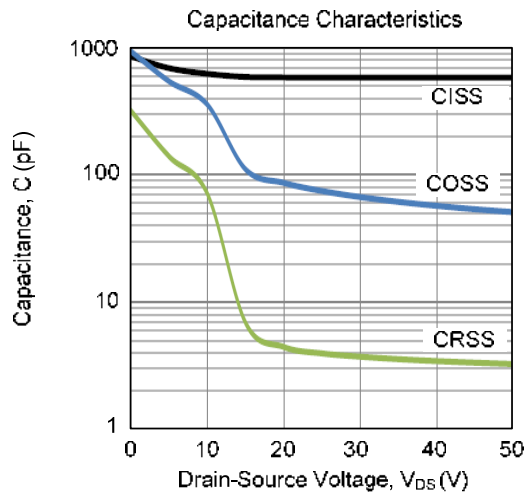
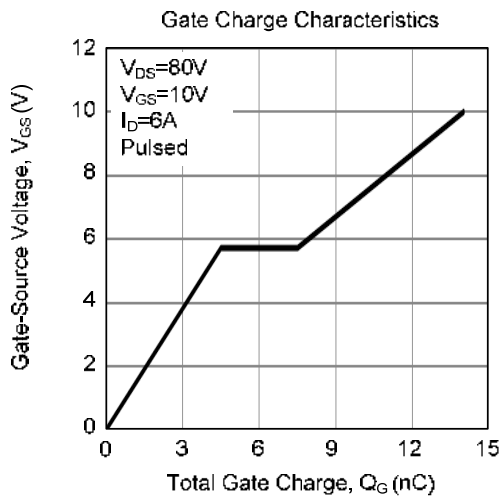
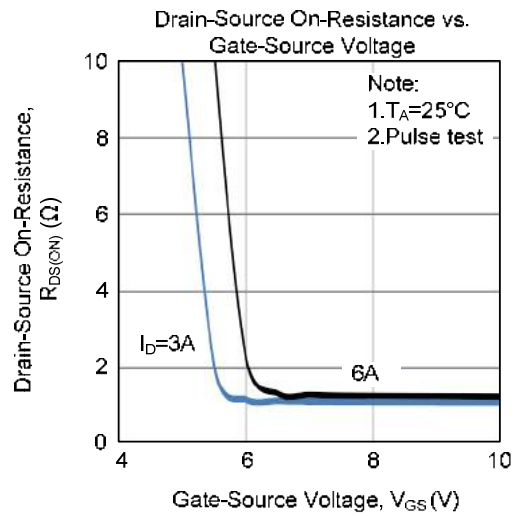
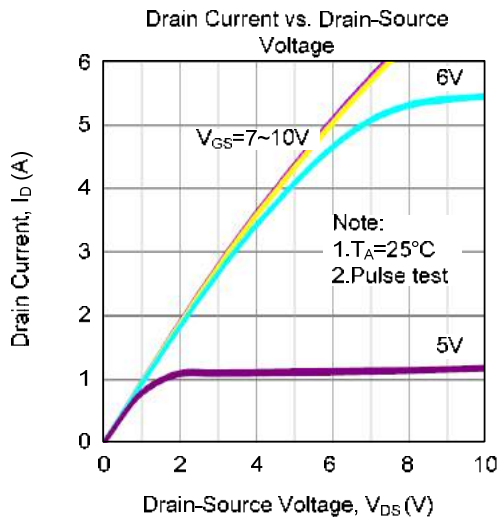
■ ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Off characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	500	-	-	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=500V, V_{GS}=0V$	-	-	10	μA
Gate-Source Leakage Current	Forward	I_{GSS}	-	-	100	nA
	Reverse				-100	nA
On characteristics						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	-	4.0	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=3.0A$	-	1.3	1.4	Ω
Dynamic characteristics						
Input Capacitance	C_{ISS}	$V_{GS}=0V, V_{DS}=25V, f=1.0\text{ MHz}$	-	584	-	pF
Output Capacitance	C_{OSS}		-	74	-	pF
Reverse Transfer Capacitance	C_{RSS}		-	3.9	-	pF
Switching characteristics						
Total Gate Charge (Note 1)	Q_G	$V_{DS}=80V, V_{GS}=10V, I_D=6A$ $I_G=1mA$ (Note 1, 2)	-	14	-	nC
Gate-source Charge	Q_{GS}		-	4.5	-	nC
Gate-drain Charge	Q_{GD}		-	3	-	nC
Turn-on Delay Time (Note 1)	$t_{D(ON)}$	$V_{DS}=400V, V_{GS}=10V, I_D=6A,$ $R_G=25\Omega$ (Note 1, 2)	-	8	-	ns
Rise Time	t_R		-	18	-	ns
Turn-off Delay Time	$t_{D(OFF)}$		-	40	-	ns
Fall-Time	t_F		-	23	-	ns
Source-drain diode ratings and characteristics						
Maximum Continuous Drain-Source Diode Forward Current	I_S		-	-	6	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}		-	-	12	A
Drain-Source Diode Forward Voltage (Note 1)	V_{SD}	$V_{GS}=0V, I_S=6.0A$	-	-	1.4	V
Reverse Recovery Time (Note 1)	t_{rr}	$V_{GS}=0V, I_S=6.0A,$ $dI_F/dt=100A/\mu s$ (Note1)	-	102	-	ns
Reverse Recovery Charge	Q_{rr}		-	1.9	-	μC

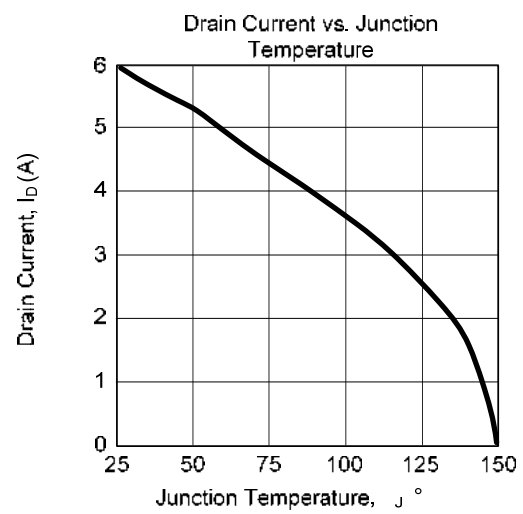
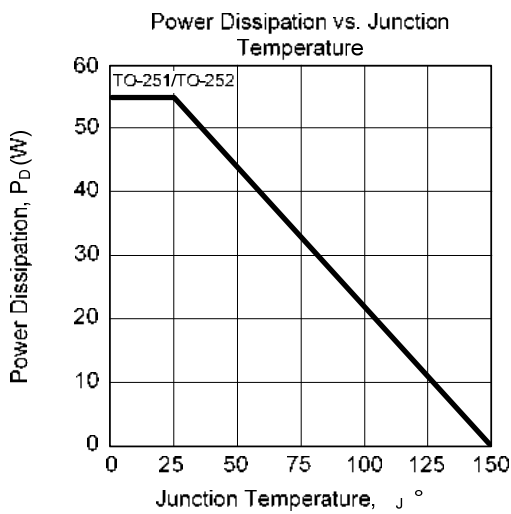
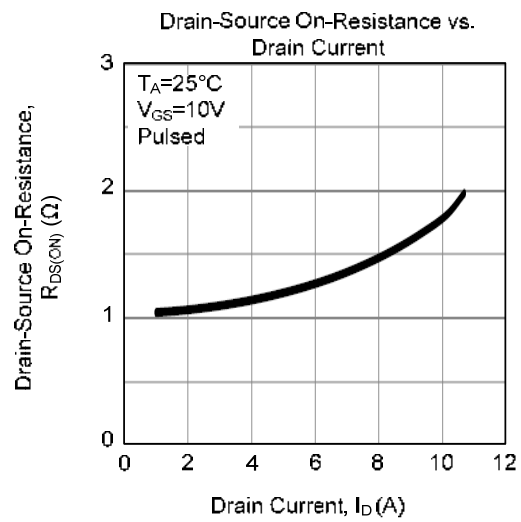
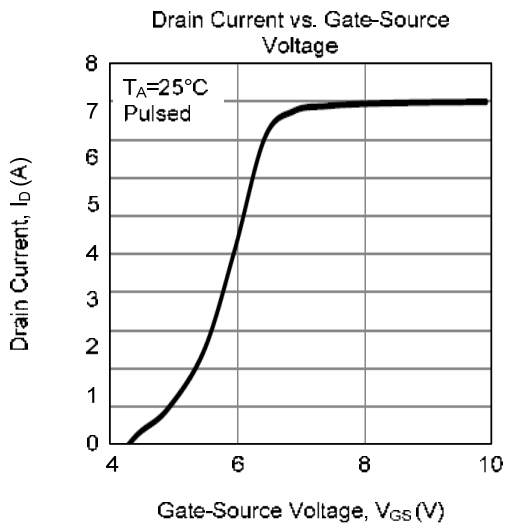
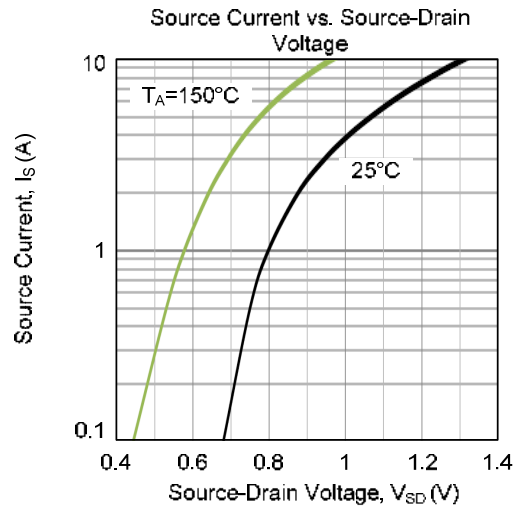
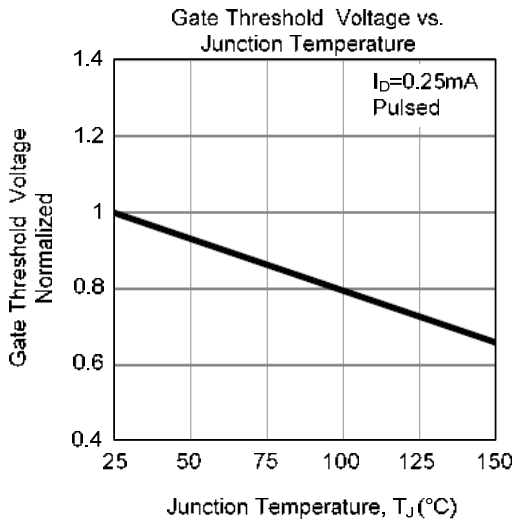
 Notes: 1. Pulse Test : Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

2. Essentially independent of operating temperature.

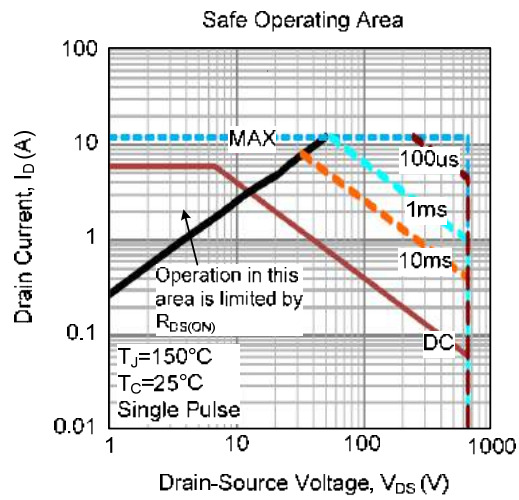
■ TYPICAL CHARACTERISTICS



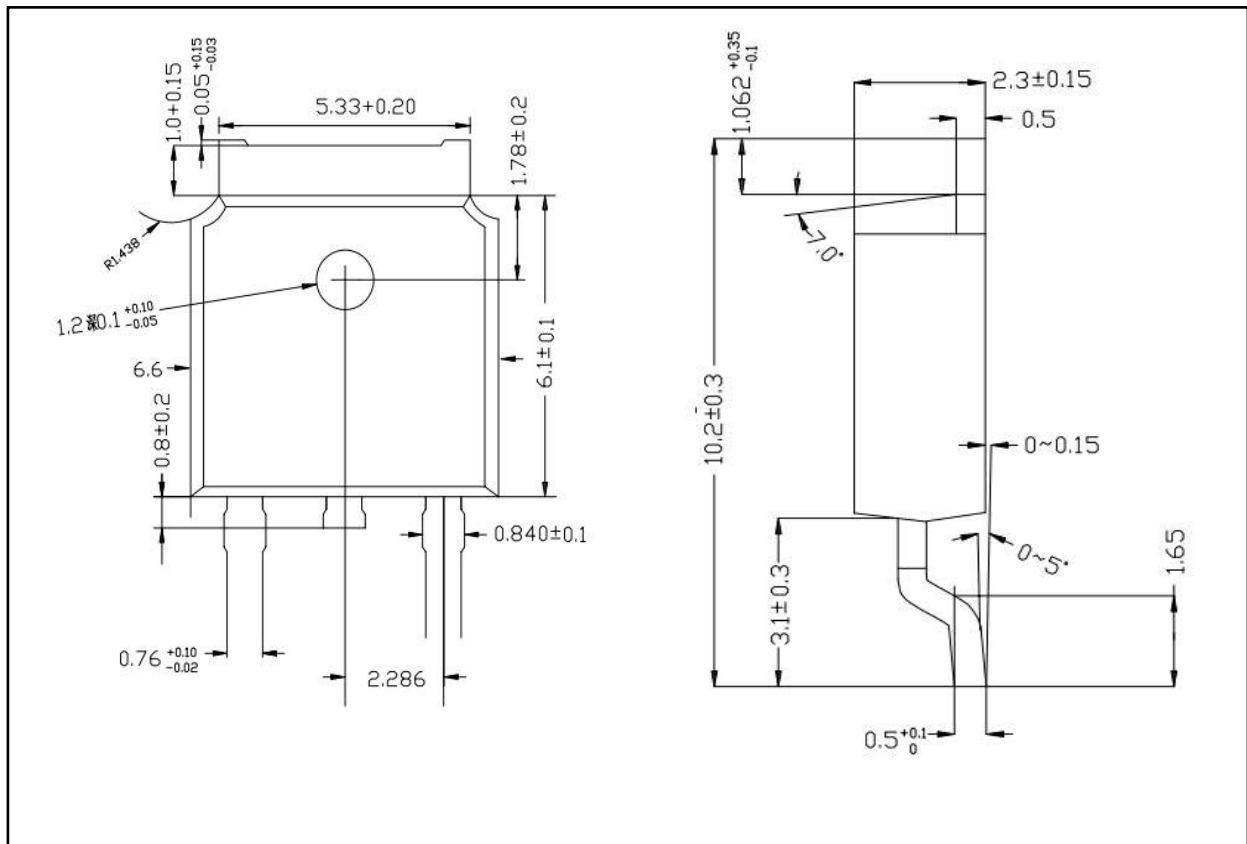
■ TYPICAL CHARACTERISTICS(Cont.)



■ TYPICAL CHARACTERISTICS(Cont.)



■ TO-252 PACKAGE OUTLINE DIMENSIONS



■ TO-251 PACKAGE OUTLINE DIMENSIONS

