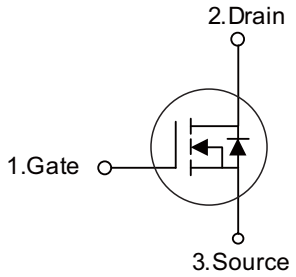
■ PRODUCT CHARACTERISTICS

VDSS	20V
R_{DS}(on)max(@V_{GS} =10 V)	8mΩ
R_{DS} (on)max(@V_{GS}=4.5 V)	13mΩ
ID	50A

Symbol



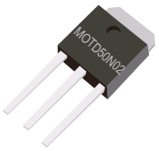
■ APPLICATIONS

* Switching applications

■ FEATURES

* Low capacitance
* Low gate charge
* Fast switching capability
* Avalanche energy specified

TO-252



TO-251

■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT50N02D	TO-252	2500 pieces /Reel
N/A	MOT50N02C	TO-251	70 pieces/Tube

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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	20	V
Gate-Source Voltage		V_{GSS}	±12	V
Continuous Drain Current	T_C=25°C	I_D	50	A
Pulsed Drain Current		I_{DM}	90	A
Avalanche Current		I_{AR}	30	A
Repetitive avalanche energy L=0.1mH		E_{AR}	135	mJ
Power Dissipation	T_C=25°C	P_D	50	W
Junction Temperature		T_J	+175	℃
Storage Temperature		T_{STG}	-55 ~ +175	℃

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. Pulse width limited by $T_{J(MAX)}$

■ THERMAL DATA

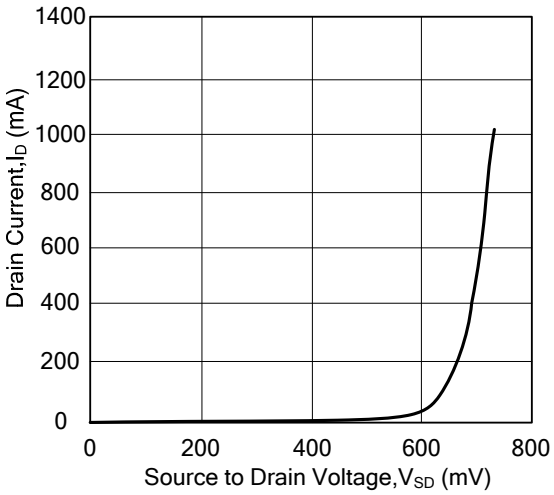
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction-to-Ambient	θ_{JA}		39	50	℃/W
Junction-to-Case	θ_{JC}		2.5	3	℃/W

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

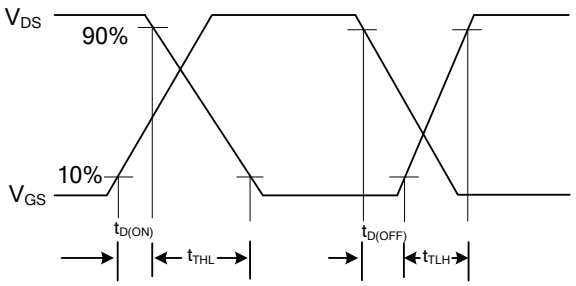
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS}=0V, I_D=250uA	20			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=20V, V_{GS}=0V			1	μA
Gate-Source Leakage Current		I_{GSS}	V_{DS}=0V, V_{GS}=±12V			100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250uA	0.4	0.7	1.1	V
On State Drain Current		$I_{D(ON)}$	V_{DS}=5V, V_{GS}=10V	100			A
Static Drain-Source On-Resistance		$R_{DS(ON)}$	V_{GS}=10V, I_D=20A			8	mΩ
			V_{GS}=4.5V, I_D=20A			13	
Forward Transconductance		g_{FS}	V_{DS}=5V, I_D=10A		35		S
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{DS}=10V, V_{GS}=0V, f=1MHz		1230	1476	pF
Output Capacitance		C_{OSS}			315		pF
Reverse Transfer Capacitance		C_{RSS}			190		pF
SWITCHING PARAMETERS							
Total Gate Charge	10V	Q_G	V_{DS}=10V, V_{GS}=10V, I_D=20A		26.4	32	nC
	4.5V				13.5		
Gate Source Charge		Q_{GS}			3.9		nC
Gate Drain Charge		Q_{GD}			7.75		nC
Turn-ON Delay Time		$t_{D(ON)}$	V_{GS}=10V, V_{DS}=10V, R_L=0.6Ω, R_G=3Ω		6.5		ns
Turn-ON Rise Time		t_R			10		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			22.7		ns
Turn-OFF Fall-Time		t_F			6.2		ns

■ TYPICAL CHARACTERISTICS

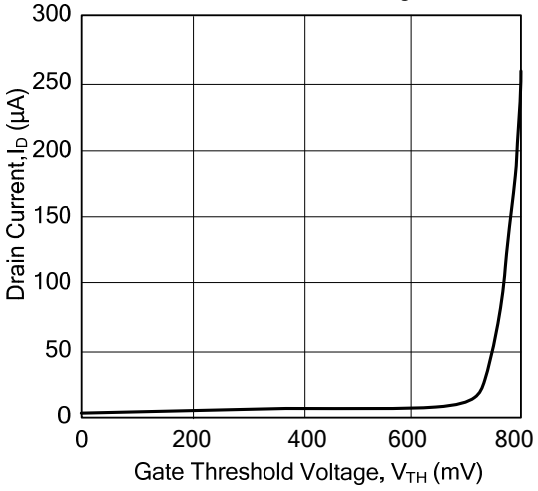
Drain Current vs. Source to Drain Voltage



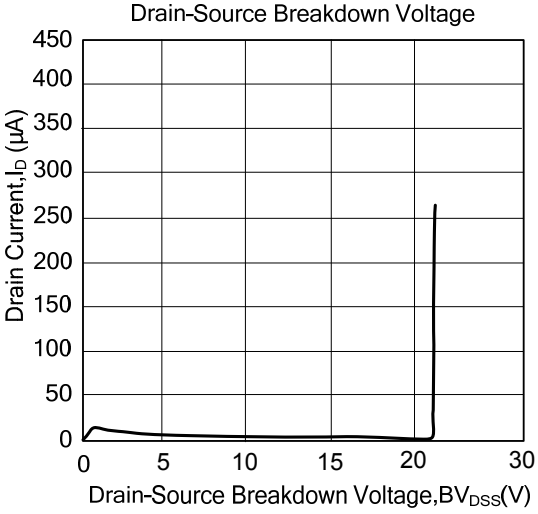
Switching Time Waveforms



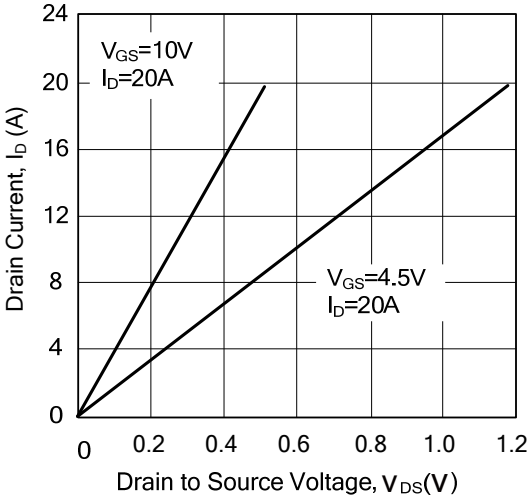
Drain Current vs.
Gate Threshold Voltage



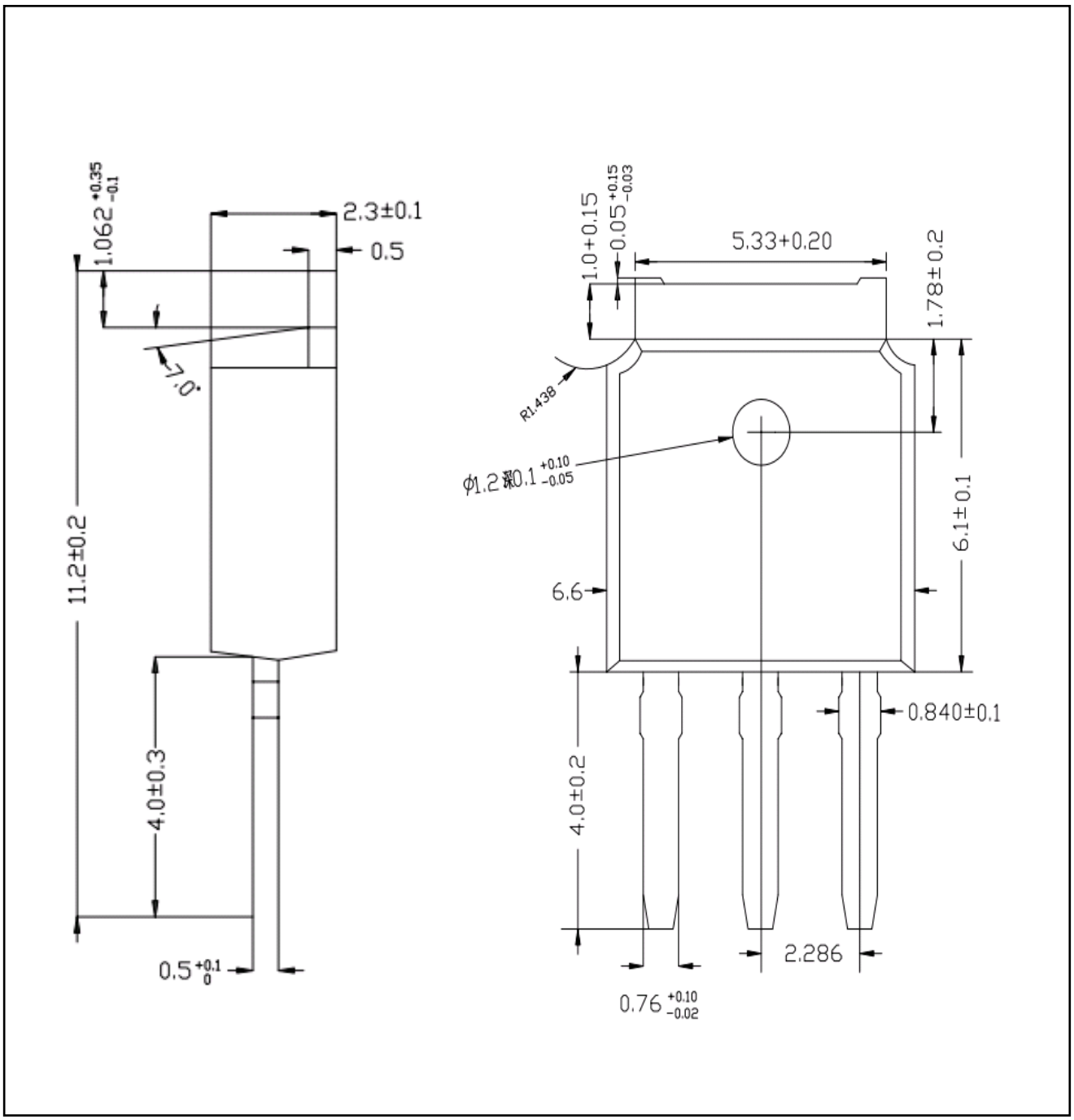
Drain Current vs.
Drain-Source Breakdown Voltage



Drain-Source On-State
Resistance Characteristics



■ TO-251PACKAGE OUTLINE DIMENSIONS



■ TO-252 PACKAGE OUTLINE DIMENSIONS