

■ PRODUCT CHARACTERISTICS

V _{DSS}	40V
R _{DS(ON)-Typ} (atV _{GS} =10V)	18mΩ
R _{DS(ON)-Typ} (atV _{GS} =4.5V)	22mΩ
I _D	10A

■ APPLICATIONS

- Load Switch
- PWM Application
- Power Management

■ FEATURES

- Advanced Trench Technology
- Excellent R_{DS(ON)} and Low Gate Charge
- Lead Free

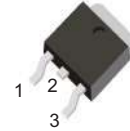
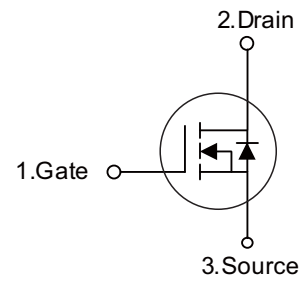
■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT4523D	TO-252	2500 pieces /Reel
N/A	MOT4523C	TO-251	70 pieces/Tube

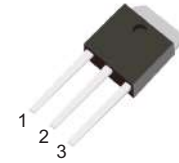
■ ABSOLUTE MAXIMUM RATINGS (T_C =25°C, unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DSS}	40	V
Gate -Source Voltage	V _{GSS}	±20	V
Continuous Drain Current	T _C =25°C	I _D	10
	T _C =100°C	I _D	6
Pulsed Drain Current	I _{DM}	40	A
Single Pulsed Avalanche Energy	E _{AS}	30	mJ
Power Dissipation	P _D	5	W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Symbol



TO-252



TO-251

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

Parameter	Symbol	Test condition	Min	Typ	Max	Unit
Off characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 250\mu\text{A}, V_{GS} = 0\text{V}$	40	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 40\text{V}, V_{GS} = 0\text{V}$	-	-	1.0	μA
Gate-Body Leakage Current	I_{GSS}	$V_{DS} = 0\text{V}, V_{GS} = \pm 20\text{V}$	-	-	± 100	nA
On characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	1.3	2	2.3	V
Static Drain-Source ON-Resistance	$R_{DS(ON)}$	$V_{GS} = 10\text{V}, I_D = 10\text{A}$	-	18	23	$\text{m}\Omega$
		$V_{GS} = 4.5\text{V}, I_D = 5\text{A}$	-	22	27	$\text{m}\Omega$
Dynamic characteristics						
Input Capacitance	C_{iss}	$V_{GS} = 0\text{V}, V_{DS} = 20\text{V},$ $f = 1\text{MHz}$	-	1342	-	pF
Output Capacitance	C_{oss}		-	87	-	pF
Reverse Transfer Capacitance	C_{rss}		-	72	-	pF
Total Gate Charge	Q_g	$V_{GS} = 0 \text{ to } 10\text{V}$ $V_{DS} = 20\text{V}, I_D = 10\text{A}$	-	26	-	nC
Gate Source Charge	Q_{gs}		-	6	-	nC
Gate Drain("Miller") Charge	Q_{gd}		-	5	-	nC
Switching characteristics						
Turn-On Delay Time	$t_{d(on)}$	$V_{GS} = 10\text{V}, V_{DD} = 20\text{V}$ $I_D = 10\text{A}, R_{GEN} = 3\Omega$	-	7	-	ns
Turn-On Rise Time	t_r		-	11	-	ns
Turn-Off Delay Time	$t_{d(off)}$		-	26	-	ns
Turn-Off Fall Time	t_f		-	5	-	ns
Drain-source diode characteristics and maximum ratings						
Maximum Continuous Forward Current	I_S		-	-	10	A
Maximum Pulsed Forward Current	I_{SM}		-	-	40	A
Drain to Source Diode Forward Voltage	V_{SD}	$V_{GS} = 0\text{V}, I_S = 10\text{A}$	-	-	1.2	V
Body Diode Reverse Recovery Time	t_{rr}	$I_F = 10\text{A}, di/dt = 100\text{A}/\mu\text{s}$	-	10	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}		-	6	-	nC

■ TYPICAL CHARACTERISTICS

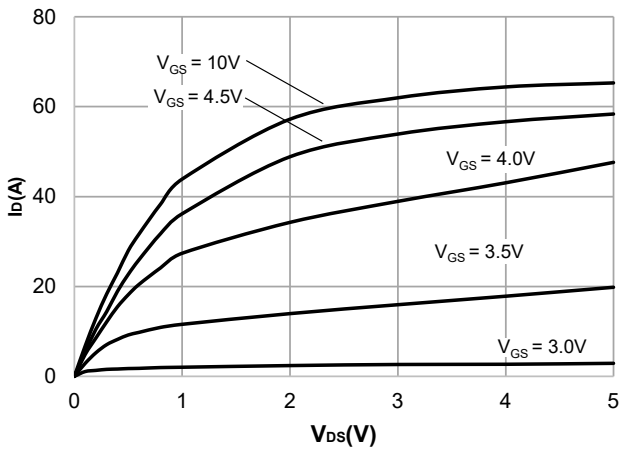


Figure 1: Output Characteristics

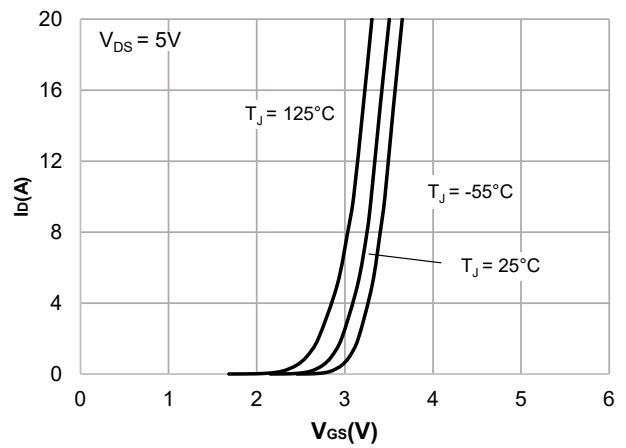


Figure 2: Typical Transfer Characteristics

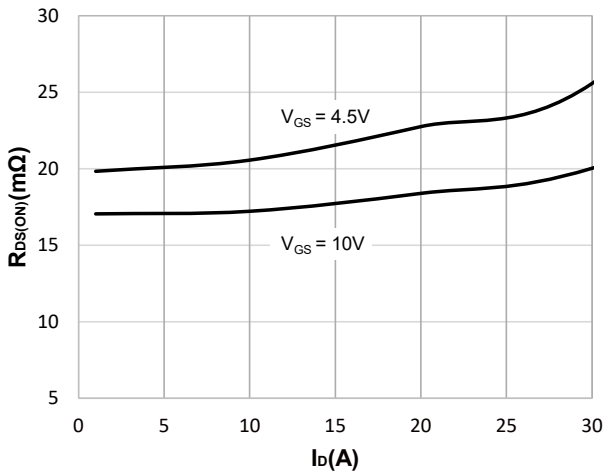


Figure 3: On-resistance vs. Drain Current

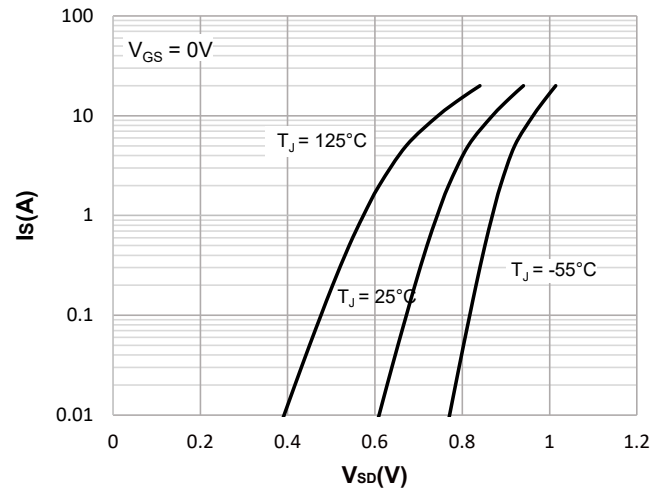


Figure 4: Body Diode Characteristics

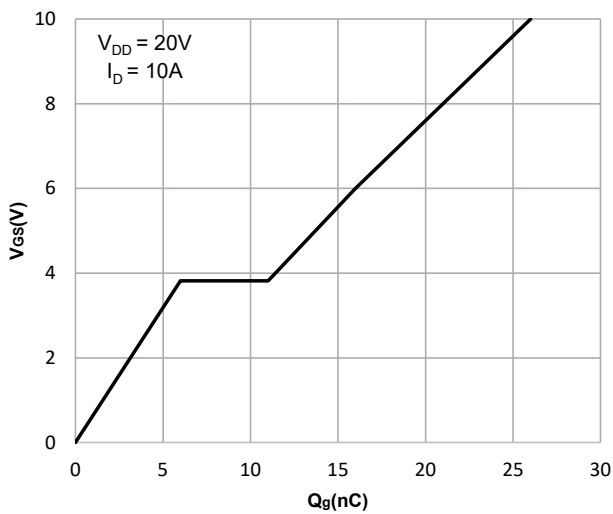


Figure 5: Gate Charge Characteristics

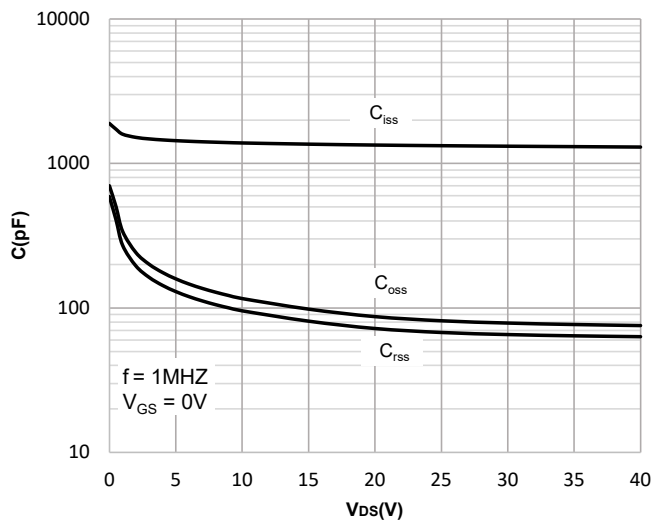


Figure 6: Capacitance Characteristics

■ TYPICAL CHARACTERISTICS(Cont.)

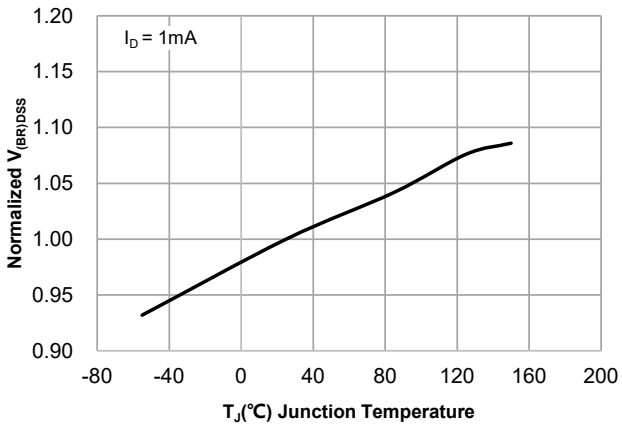


Figure 7: Normalized Breakdown voltage vs. Junction Temperature

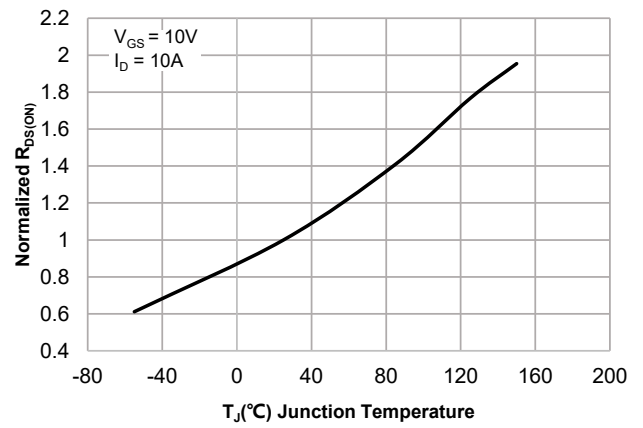


Figure 8: Normalized on Resistance vs. Junction Temperature

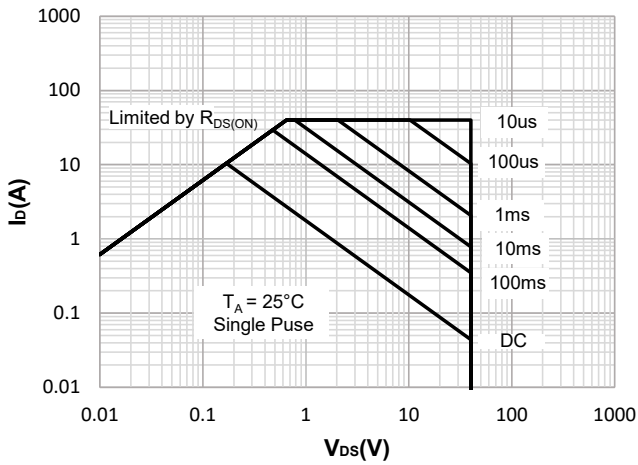


Figure 9: Maximum Safe Operating Area

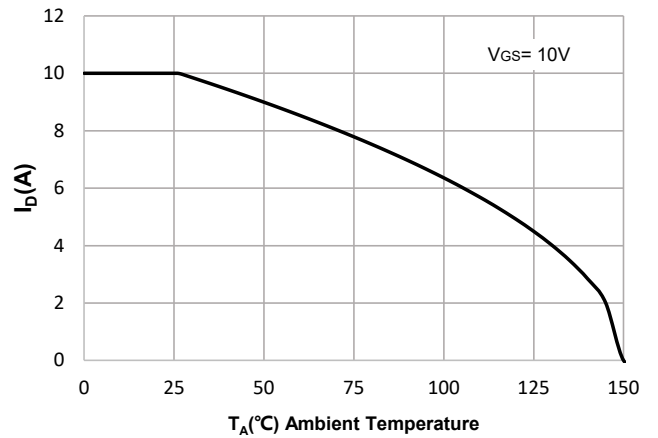
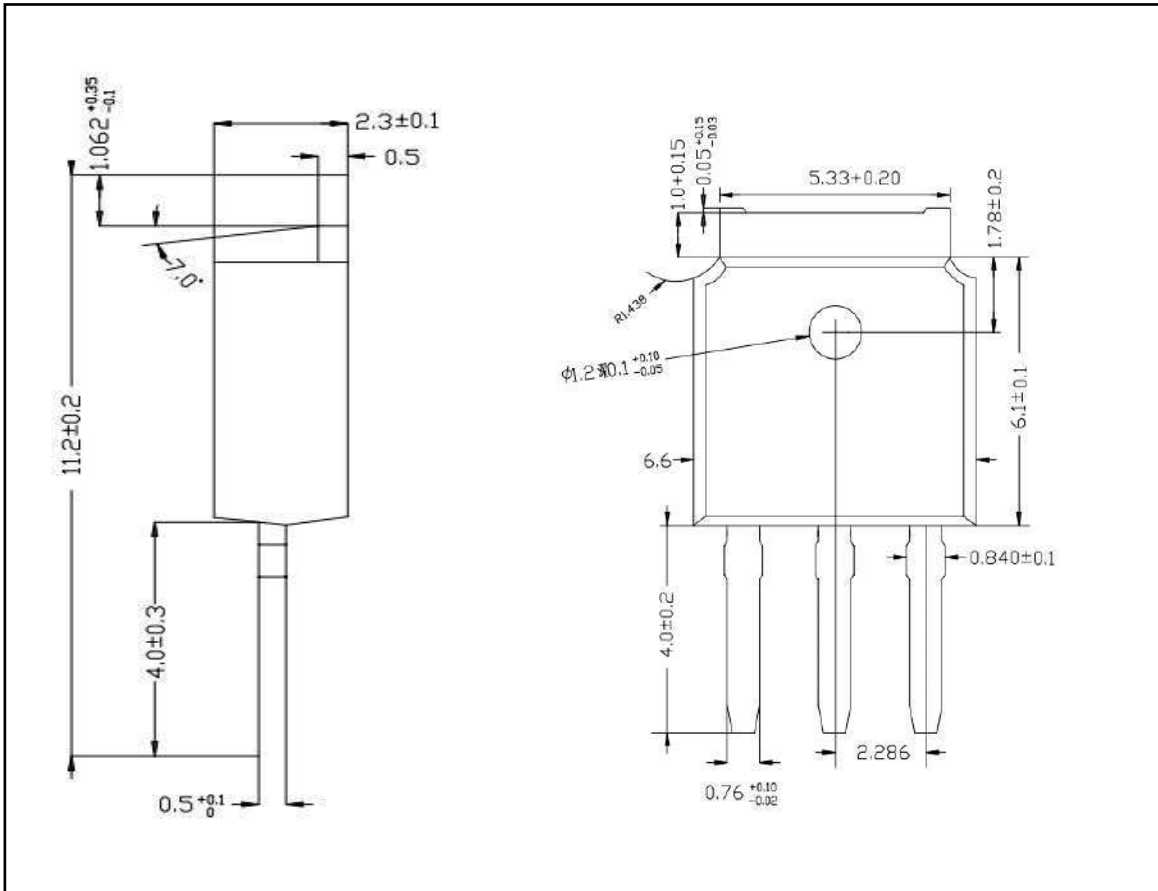
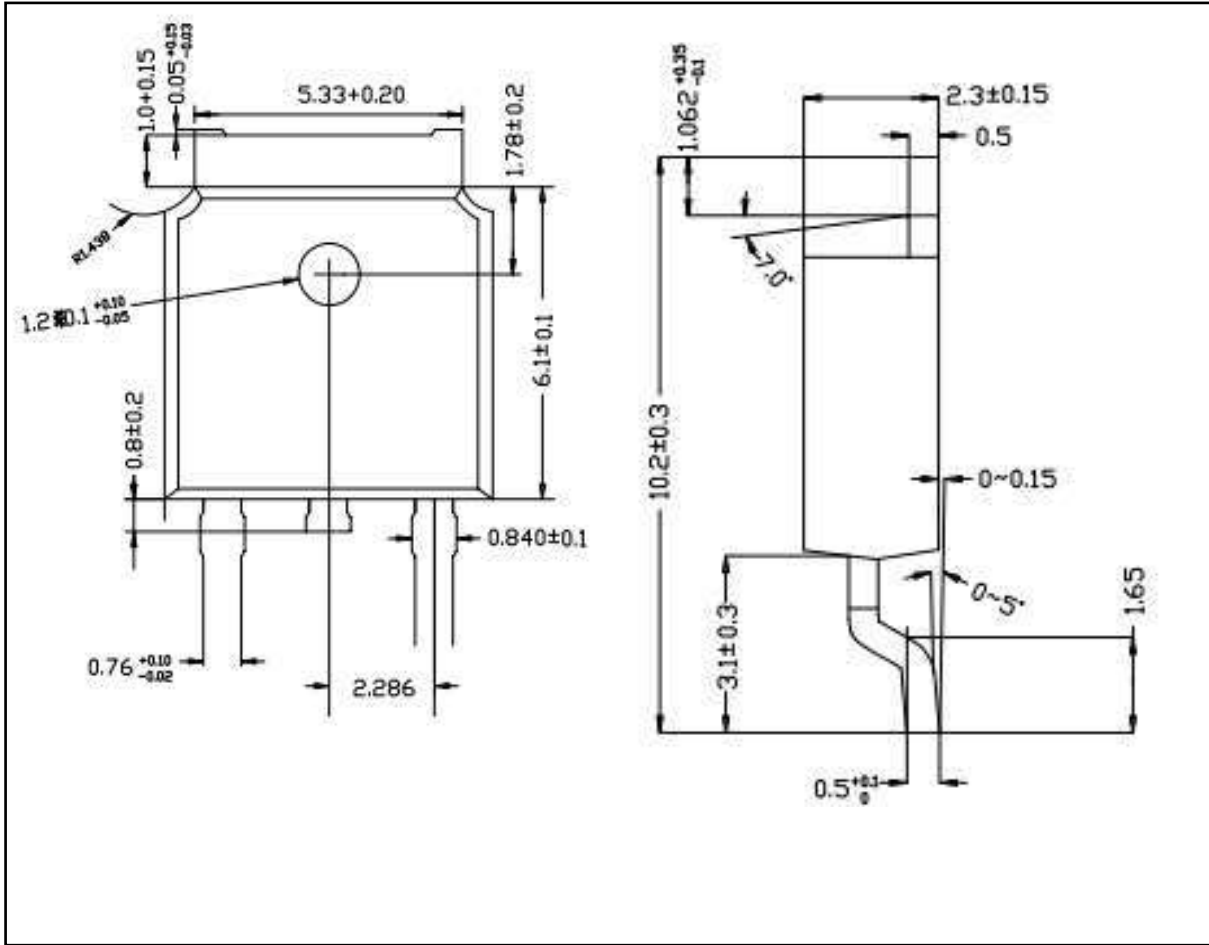


Figure 10: Maximum Continuous Driant Current vs. Ambient Temperature

■ TO-251 PACKAGE OUTLINE DIMENSIONS



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