

PRODUCT CHARACTERISTICS

V_{DSS}	250V
$R_{DS(ON)}$ -Typ (@ $V_{GS}=10V$)	330m Ω
I_D	9A

APPLICATIONS

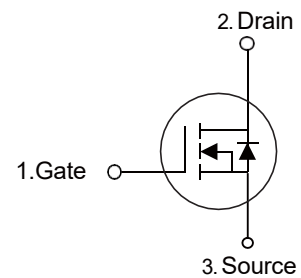
Load Switch
PWM Application
Power Management

FEATURES

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



Symbol



TO-252

ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT9N25D	TO-252	2500 pieces /Reel

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

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	250	V
Gate -Source Voltage		V_{GSS}	± 20	V
Continuous Drain Current (@ $V_{GS}=10V$)	$T_C=25^{\circ}C$	I_D	9	A
	$T_C=100^{\circ}C$	I_D	5.7	A
Pulsed Drain Current		I_{DM}	36	A
Single Pulsed Avalanche Energy		E_{AS}	200	mJ
Power Dissipation		P_D	54	W
Operating Temperature		T_J	+ 150	$^{\circ}C$
Storage Temperature		T_{STG}	-55 to + 150	$^{\circ}C$

THERMAL CHARACTERISTICS

Parameter	Symbol	Typ	Unit
Junction to Case	R_{thJC}	2.3	$^{\circ}C/W$

Note: * EAS condition: $T_J=25^{\circ}C$, $V_{DD}=50V$, $V_G=10V$, $L=1mH$, $R_g=25\Omega$

■ 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 _{DSS}	V _{GS} =0V I _D =250μA	250	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =250V,V _{GS} =0V	-	-	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V,V _{DS} =0V	-	-	±100	nA
On characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =250μA	2	-	4	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =4.5A	-	330	400	mΩ
Dynamic characteristics						
Gate capacitance	R _g	V _{GS} =0V,V _{DS} =0V ,f=1.0MHz	-	1	-	Ω
Forward Transconductance	g _{FS}	V _{DS} =5V,I _D =5A	-	7	-	S
Input Capacitance	C _{iss}	V _{DS} =20V,V _{GS} =0V, F=1.0MHz	-	495	-	PF
Output Capacitance	C _{oss}		-	93	-	PF
Reverse Transfer Capacitance	C _{rss}		-	49	-	PF
Turn-on Delay Time	t _{d(on)}	V _{DS} =125V, I _D =9A, V _{GS} =10V,R _G =25Ω	-	15	-	nS
Turn-on Rise Time	t _r		-	25	-	nS
Turn-Off Delay Time	t _{d(off)}		-	35	-	nS
Turn-Off Fall Time	t _f		-	15	-	nS
Total Gate Charge	Q _g	V _{DS} =200V,I _D =9A, V _{GS} =10V	-	14.5	-	nC
Gate-Source Charge	Q _{gs}		-	3.2	-	nC
Gate-Drain Charge	Q _{gd}		-	6.3	-	nC
Drain-source diode characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V,I _S =9A	-	0.86	1.2	V
Diode Forward Current	I _S				9	A
Maximum Pulsed Current	I _{SM}		-	-	36	A
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _S = 9A di/dt = 100A/μs	-	160	-	nS
Reverse Recovery Charge	Q _{rr}		-	210	-	nC

■ TYPICAL CHARACTERISTICS

Figure 1: I_D - V_{DS}

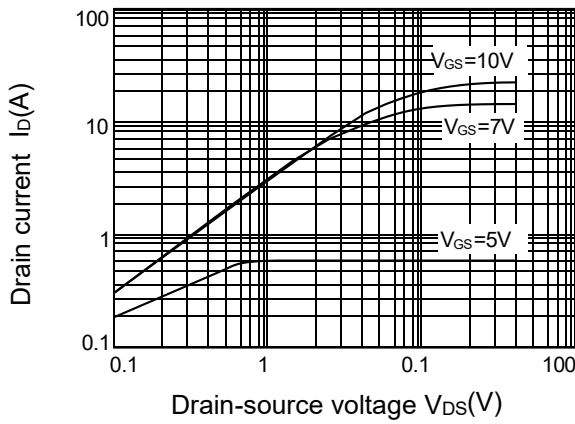


Figure 2: I_D - V_{GS}

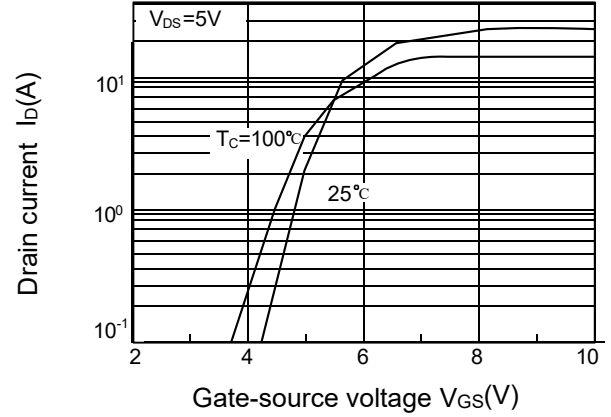


Figure 3: BV_{DSS} - T_J

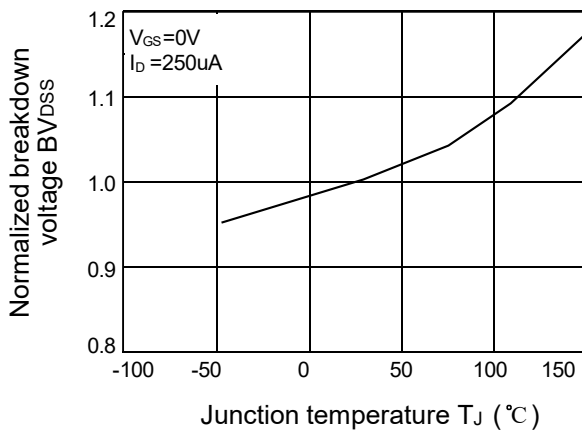


Figure 4: $R_{DS(ON)}$ - I_D

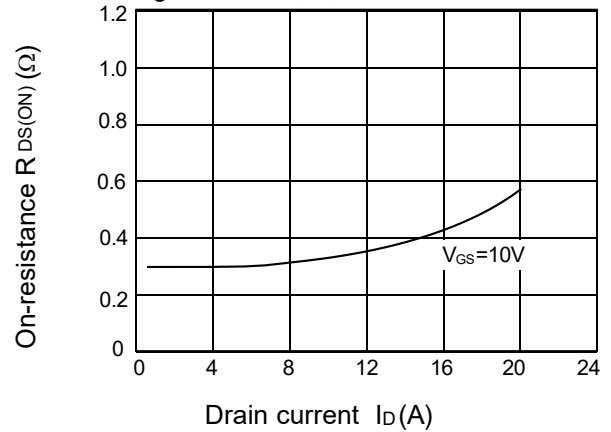


Figure 5: I_S - V_{SD}

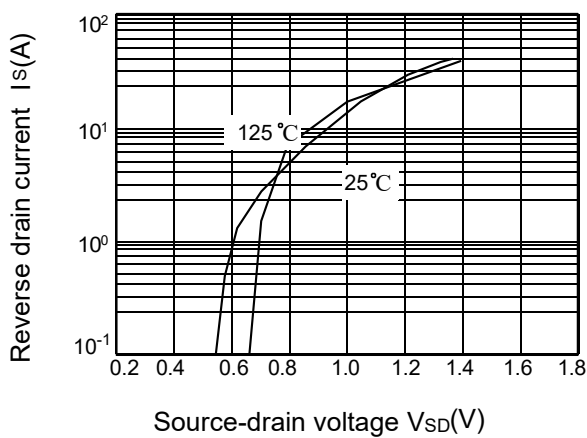
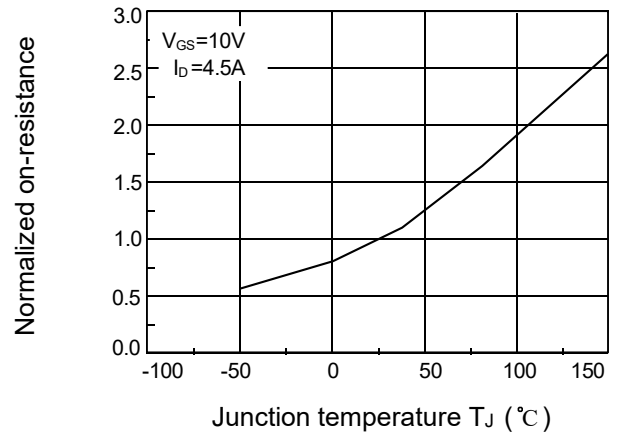


Figure 6: $R_{DS(ON)}$ - T_J



■ TYPICAL CHARACTERISTICS(Cont.)

Figure 7: C - V_{DS}

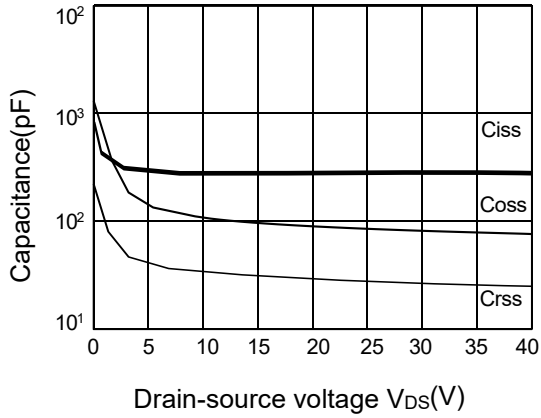


Figure 8: Qg - V_{GS}

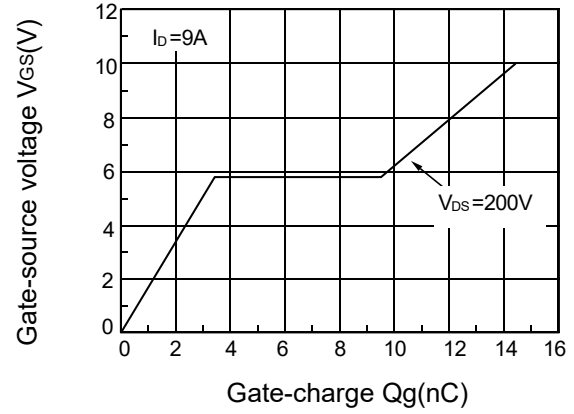


Figure 9: Safe operation area

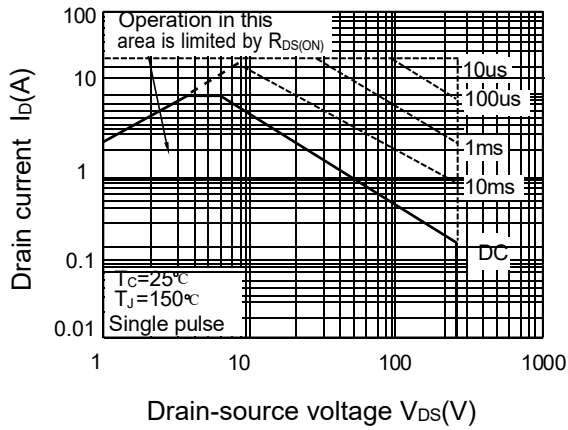
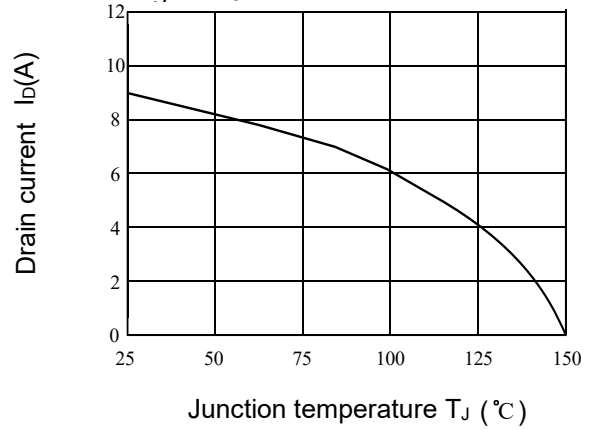


Figure 10: I_D - T_J



■ TO-252 PACKAGE OUTLINE DIMENSIONS

