

PRODUCT CHARACTERISTICS

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

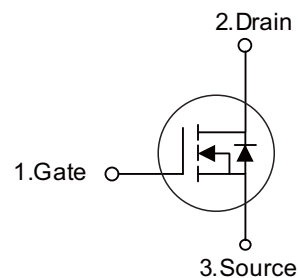
APPLICATIONS

Load Switch
PWM Application
Power Management

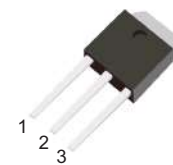
FEATURES

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

Symbol



TO-252



TO-251

ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT9N25D	TO-252	2500 pieces /Reel
N/A	MOT9N25C	TO-251	70 pieces/Tube

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	250	V
Gate -Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	9	A
		5.7	A
Pulsed Drain Current	I_{DM}	36	A
Single Pulsed Avalanche Energy	E_{AS}	200	mJ
Power Dissipation	P_D	54	W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.3	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

■ 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	BV _{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
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =5A	5	-	-	S
Dynamic characteristics						
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 _{DD} =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	-	-	1.2	V
Diode Forward Current	I _S				36	A
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F = 9A di/dt = 100A/μs	-	160	-	nS
Reverse Recovery Charge	Q _{rr}		-	210	-	nC

■ TYPICAL CHARACTERISTICS

Figure 1: I_D - V_{DS}

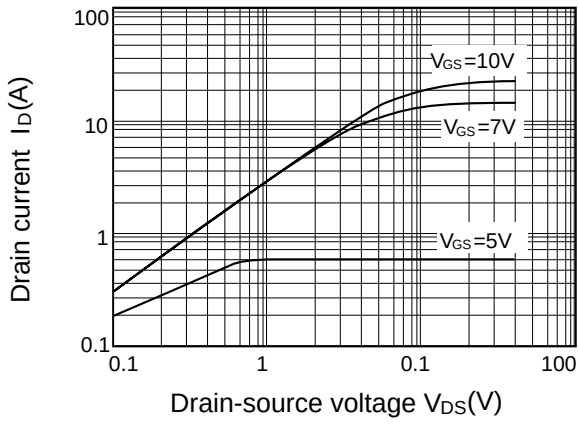


Figure 2: I_D - V_{GS}

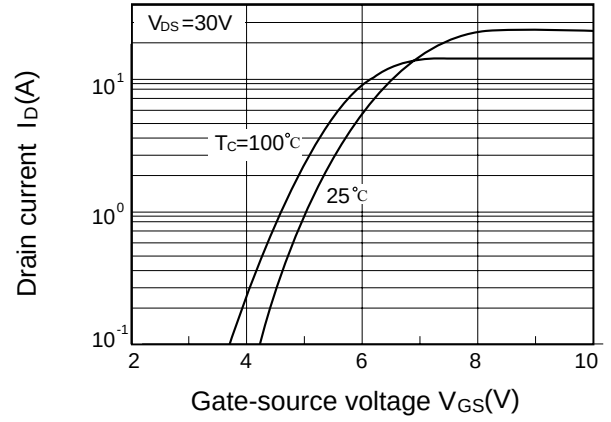


Figure 3: BV_{DSS} - T_J

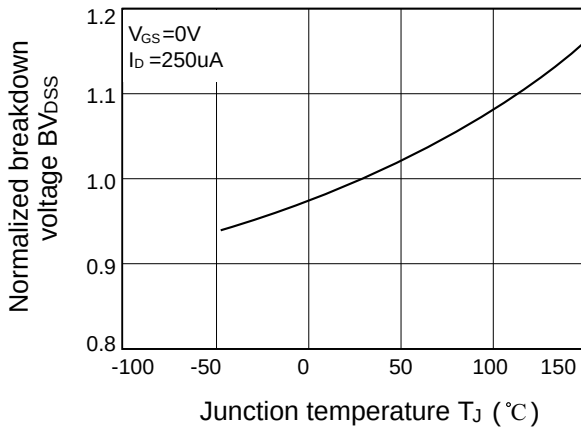


Figure 4: $R_{DS(ON)}$ - I_D

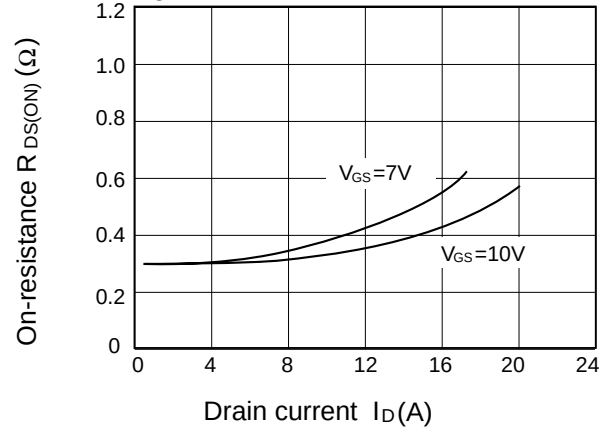


Figure 5: I_S - V_{SD}

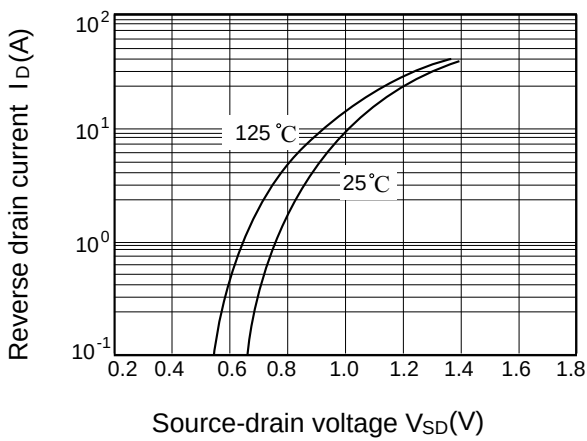
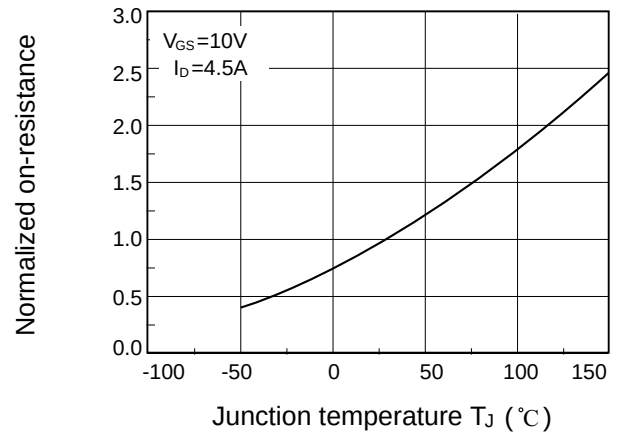


Figure 6: $R_{DS(ON)}$ - T_J



■ TYPICAL CHARACTERISTICS(Cont.)

Figure 7: C - V_{DS}

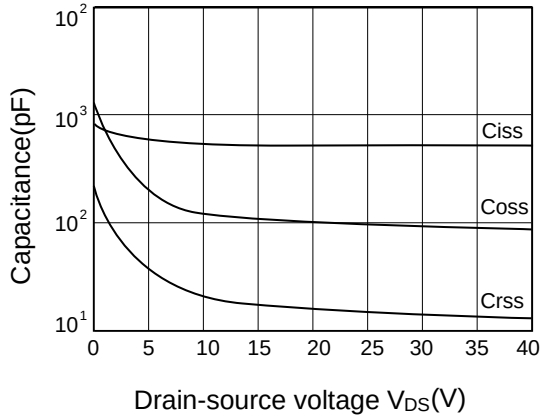


Figure 8: Qg - V_{GS}

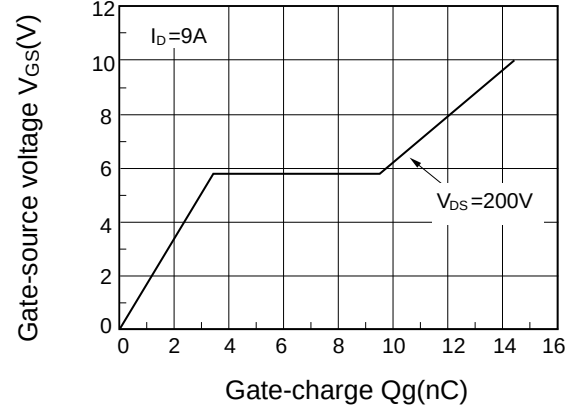


Figure 9: Safe operation area

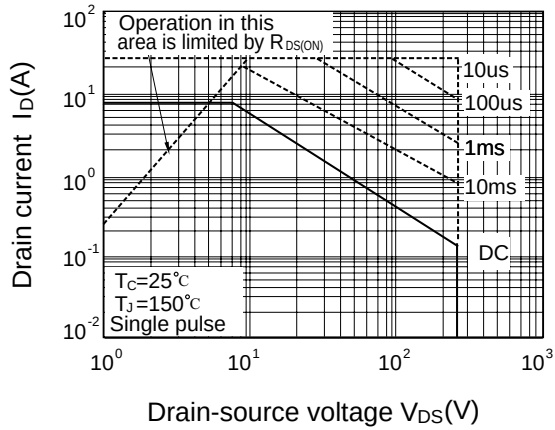
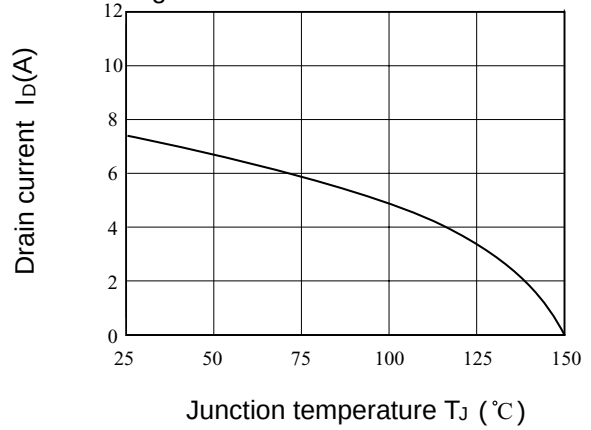


Figure 10: I_D - T_J



■ TO-252 PACKAGE OUTLINE DIMENSIONS

