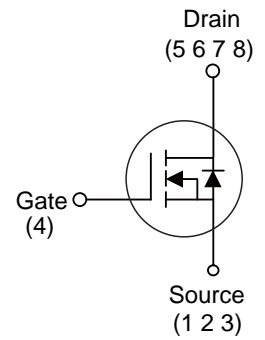


■ PRODUCT CHARACTERISTICS

V _{DSS}	100V
R _{DS(ON)} Typ(@V _{GS} =10V)	13mΩ
R _{DS(ON)} Typ(@V _{GS} =4.5V)	17mΩ
I _D	40A

Symbol



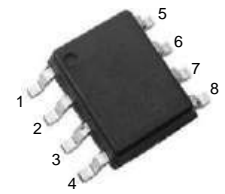
■ APPLICATIONS

- * Electronic lamp ballasts based on half bridge
- * Load Switching, Quick/Wireless Charge.
- * Motor Driving

■ FEATURE

- * Low Gate Charge
- * Pb-Free Lead Plating

■ ORDER INFORMATION



SOP8

Order Codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT1512S	SOP8	4000 pieces/Reel

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

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V _{DSS}	100	V
Gate-Source Voltage	V _{GSS}	±20	V
Drain Current Continuous(@V _{GS} =10V, T _A =25°C)	I _D	40	A
Drain Current Pulsed	I _{DM}	160	A
Avalanche Energy	E _{AS}	30	mJ
Power Dissipation	P _D	3.1	W
Junction Temperature	T _J	+150	°C
Storage Temperature	T _{STG}	-55~ +150	°C

■ THERMAL CHARACTERISTICS

Parameter	Symbol	Typ	Unit
Junction to Ambient	R _{thJA}	40.3	°C/W

Note: * EAS condition: T_J=25°C, V_{DS}=25V, V_G=10V, L=0.5mH, R_g=25Ω

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Off characteristics						
Drain to Source Breakdown Voltage	V_{DS}	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
Drain to Source Leakage Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V$	-	-	1	μA
Gate to Source Forward Leakage	$I_{GSS(F)}$	$V_{GS}=+20V, V_{DS}=0V$	-	-	100	nA
Gate to Source Reverse Leakage	$I_{GSS(R)}$	$V_{GS}=-20V, V_{DS}=0V$	-	-	-100	nA
On characteristics						
Drain to Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=10A$	-	13	16	m Ω
		$V_{GS}=4.5V, I_D=10A$	-	17	22	m Ω
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	2.0	2.5	V
Dynamic characteristics						
Gate capacitance	R_g	$V_{GS}=0V, V_{DS}=0V, f=1.0\text{MHz}$	-	1.2	-	Ω
Forward Transconductance	g_{fs}	$V_{DS}=5V, I_D=5A$	8	-	-	S
Input Capacitance	C_{iss}	$V_{DS}=20V, V_{GS}=0V$ $f=1.0\text{MHz}$	-	1400	-	pF
Output Capacitance	C_{oss}		-	586	-	pF
Reverse Transfer Capacitance	C_{rss}		-	50	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	$t_{d(ON)}$	$V_{GS}=10V, V_{DS}=50V,$ $I_D=20A, R_G=3\Omega$	-	14	-	ns
Rise Time	t_r		-	16	-	ns
Turn-off Delay Time	$t_{d(OFF)}$		-	28	-	ns
Fall Time	t_f		-	8	-	ns
Total Gate Charge	Q_g	$I_D=20A, V_{DS}=50V$ $V_{GS}=10V$	-	37.6	-	nC
Gate to Source Charge	Q_{gs}		-	6.5	-	nC
Gate to Drain("Miller") Charge	Q_{gd}		-	9.5	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I_S		-	-	40	A
Maximum Pulsed Current(Body Diode)	I_{SM}		-	-	160	A
Diode Forward Voltage	V_{SD}	$I_{SD}=1A, V_{GS}=0V$	-	0.74	1.2	V
Reverse Recovery Time	t_{rr}	$I_{SD}=20A, T_J=25^\circ\text{C}$ $di/dt=100A/\mu s$	-	43	-	ns
Reverse Recovery Charge	Q_{rr}		-	90	-	nC

■ TYPICAL CHARACTERISTICS

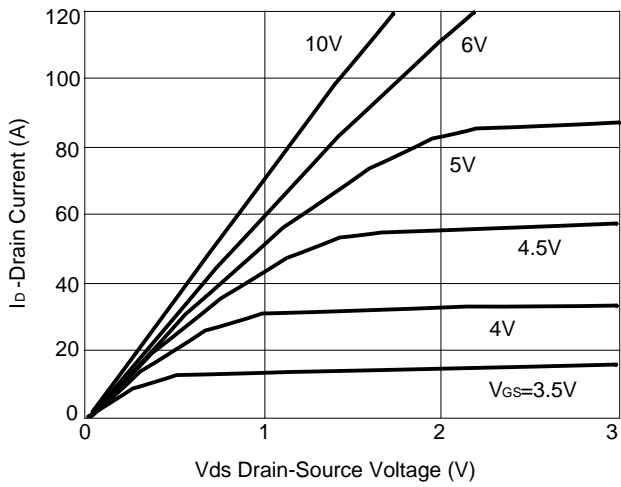


Figure 1: Output Characteristics

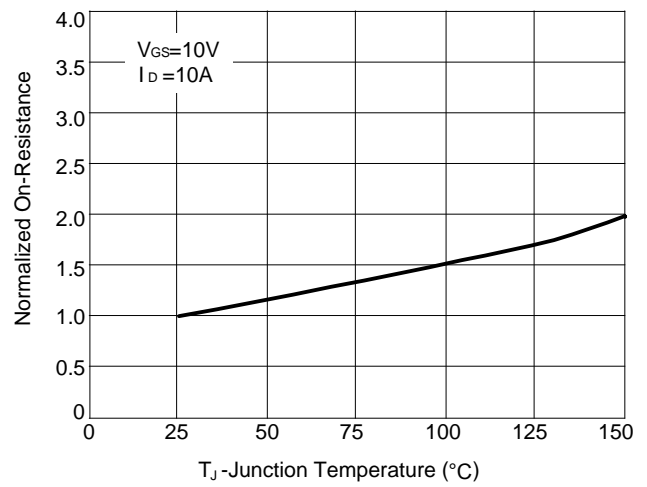


Figure 2: $R_{DS(on)}$ -Junction Temperature

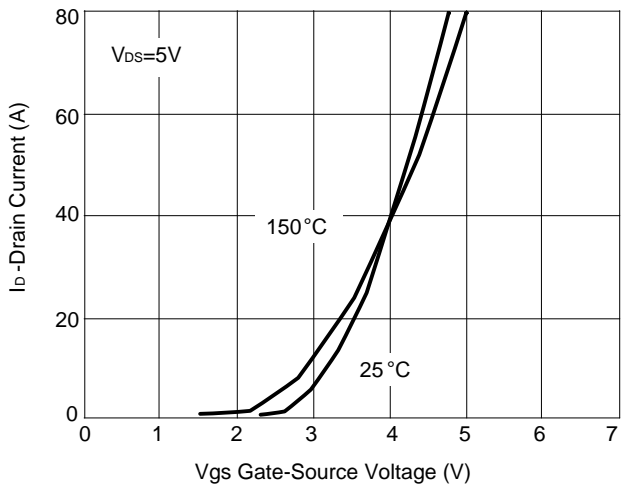


Figure 3: Transfer Characteristics

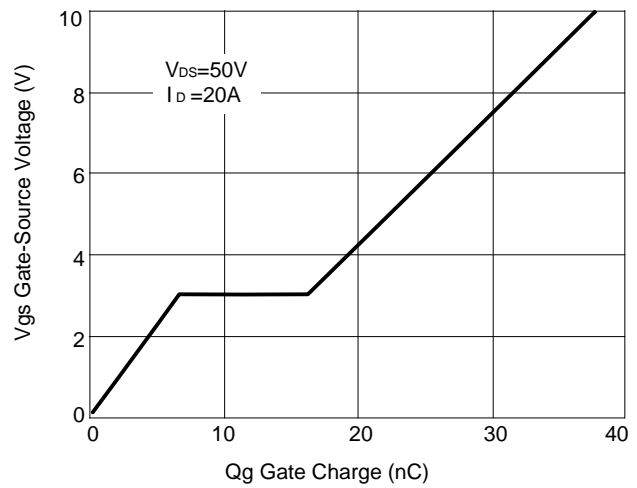


Figure 4: Gate Charge

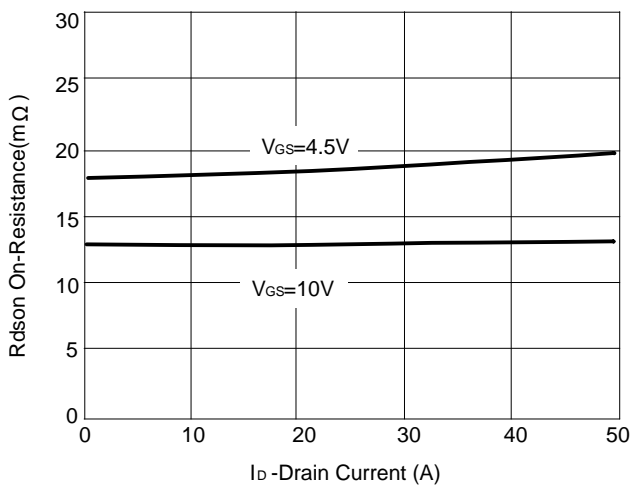


Figure 5: $R_{DS(on)}$ -Drain Current

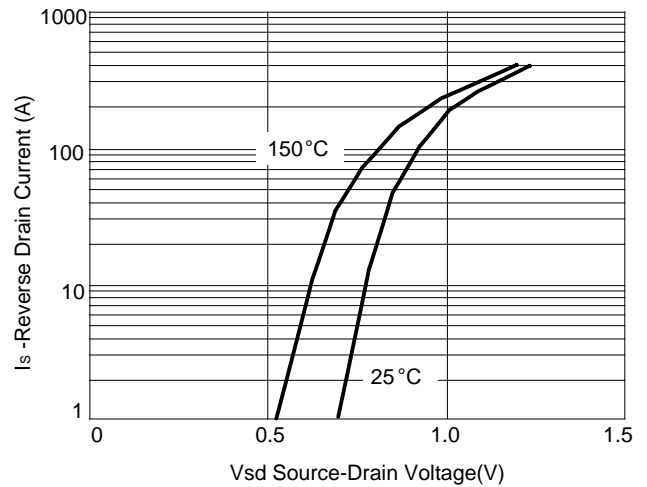


Figure 6: Source-Drain Diode Forward

■ TYPICAL CHARACTERISTICS(Cont.)

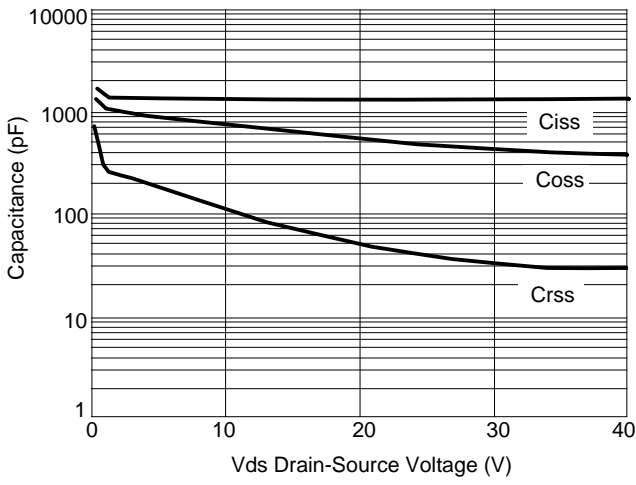


Figure 7: Capacitance vs vds

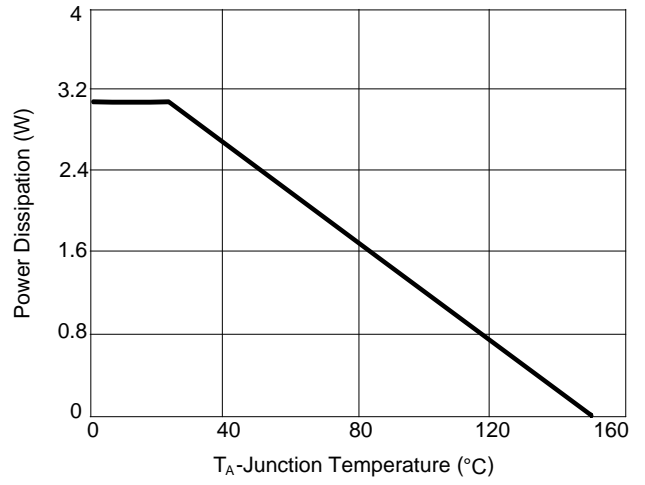


Figure 8: Power De-rating

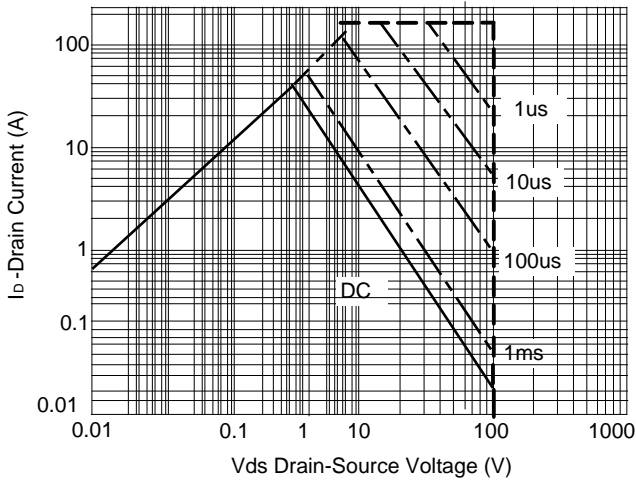


Figure 9: Safe Operation Area

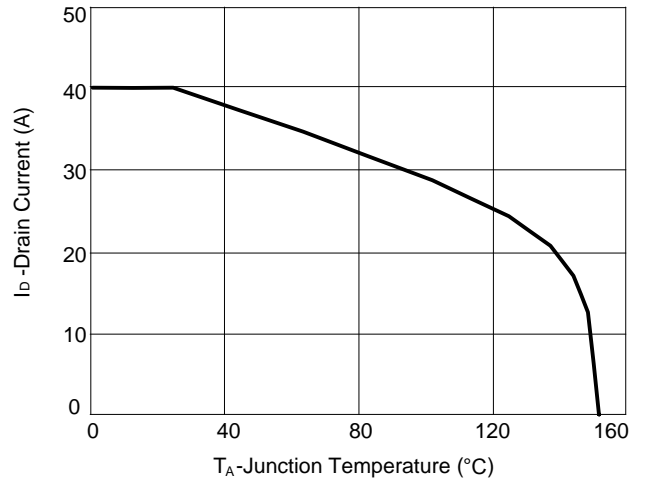


Figure 10: Current De-rating

■ SOP8 PACKAGE OUTLINE DIMENSIONS

