

■ PRODUCT CHARACTERISTICS

V_{DSS}	30V
$R_{DS(ON)}$ Typ(@ $V_{GS}=10V$)	2.6m Ω
$R_{DS(ON)}$ Typ(@ $V_{GS}=4.5V$)	3.5m Ω
I_D	130A

■ APPLICATIONS

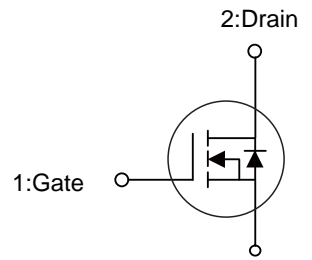
- * Electronic lamp ballasts based on half bridge
- * Load Switching, Quick/Wireless Charge.
- * Motor Driving

■ FEATURE

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



Symbol



3:Source



TO-252

■ ORDER INFORMATION

Order Codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT130N03D	TO-252	2500 pieces/Reel

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

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DSS}	30	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current Continuous(@ $V_{GS}=10V, T_A=25^{\circ}C$)	I_D	130	A
Drain Current Continuous(@ $V_{GS}=10V, T_A=100^{\circ}C$)	I_D	80	A
Drain Current Pulsed	I_{DM}	520	A
Avalanche Energy *	E_{AS}	400	mJ
Power Dissipation	P_D	88	W
Junction Temperature	T_J	+150	$^{\circ}C$
Storage Temperature	T_{STG}	-55~ +150	$^{\circ}C$

■ THERMAL CHARACTERISTICS

Parameter	Symbol	Typ	Unit
Junction to Case	R_{thJC}	1.42	$^{\circ}C/W$

Note: * EAS condition: $T_J=25^{\circ}C, V_{DD}=24V, V_G=10V, L=0.5mH, R_g=25\Omega$

■ 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_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
Drain to Source Leakage Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$	-	-	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	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$	-	2.6	3.5	$m\Omega$
		$V_{GS}=4.5V, I_D=20A$	-	3.5	4.8	$m\Omega$
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.5	2.5	V
Dynamic characteristics						
Gate Resistance	R_g	$V_{GS}=0V, V_{DS}=0V, f=1.0MHz$	-	2.7	-	Ω
Forward Transconductance	g_{fs}	$V_{DS}=10V, I_D=3A$	-	12	-	S
Input Capacitance	C_{iss}	$V_{DS}=12V, V_{GS}=0V$ $f=1.0MHz$	-	3900	-	pF
Output Capacitance	C_{oss}		-	468	-	pF
Reverse Transfer Capacitance	C_{rss}		-	408	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	$t_{d(ON)}$	$V_{GS}=10V, V_{DS}=15V,$ $I_D=65A, R_G=1.6\Omega$	-	7	-	ns
Rise Time	t_r		-	5	-	ns
Turn-off Delay Time	$t_{d(OFF)}$		-	28	-	ns
Fall Time	t_f		-	6	-	ns
Total Gate Charge	Q_g	$I_D=65A, V_{DS}=15V$ $V_{GS}=10V$	-	80	-	nC
Gate to Source Charge	Q_{gs}		-	12.4	-	nC
Gate to Drain("Miller") Charge	Q_{gd}		-	18.3	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I_S		-	-	130	A
Maximum Pulsed Current(Body Diode)	I_{SM}		-	-	520	A
Diode Forward Voltage	V_{SD}	$I_{SD}=1A, V_{GS}=0V$	-	0.7	1.2	V
Reverse Recovery Time	t_{rr}	$I_{SD}=65A, T_J=25^{\circ}\text{C}$ $di/dt=100A/\mu s$	-	26	-	ns
Reverse Recovery Charge	Q_{rr}		-	95	-	nC

■ TYPICAL CHARACTERISTICS

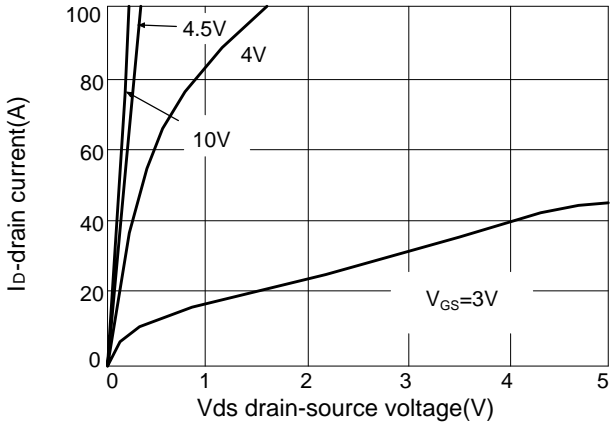


Figure 1: Output characteristics

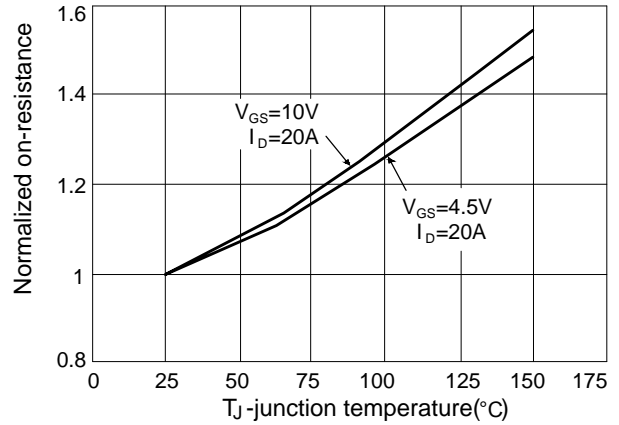


Figure 2: $R_{DS(on)}$ -junction temperature

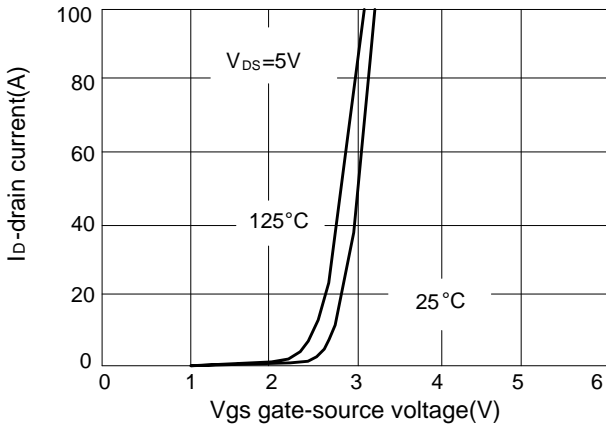


Figure 3: Transfer characteristics

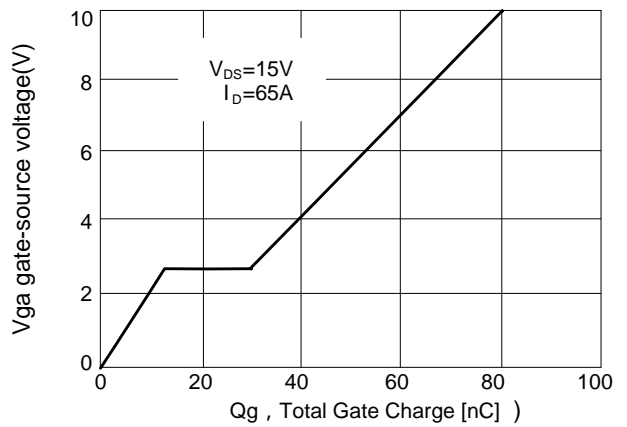


Figure 4: Gate charge characteristics

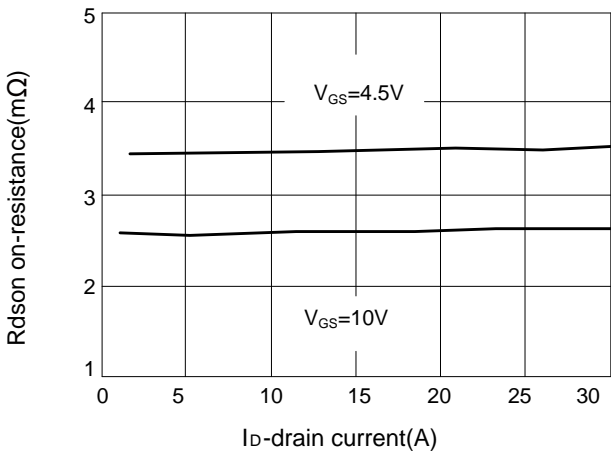


Figure 5: $R_{DS(on)}$ -drain current

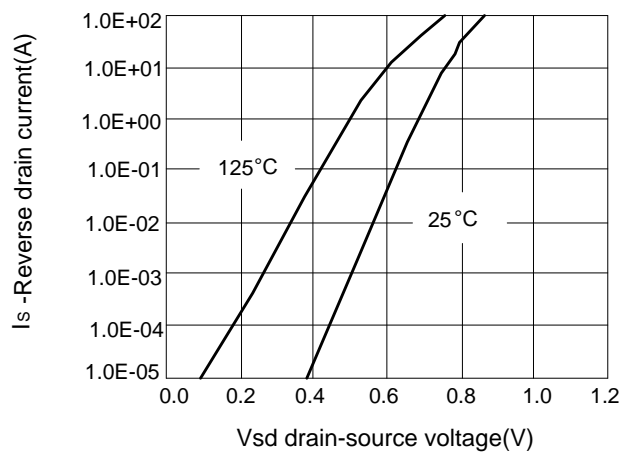


Figure 6: Source-drain diode forward

■ TYPICAL CHARACTERISTICS(Cont.)

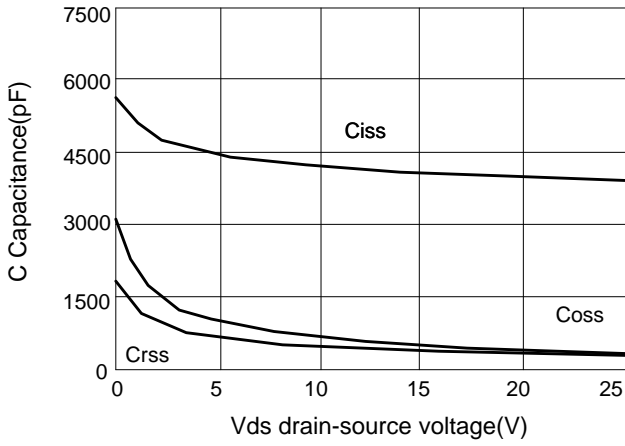


Figure 7: Capacitance vs. vds

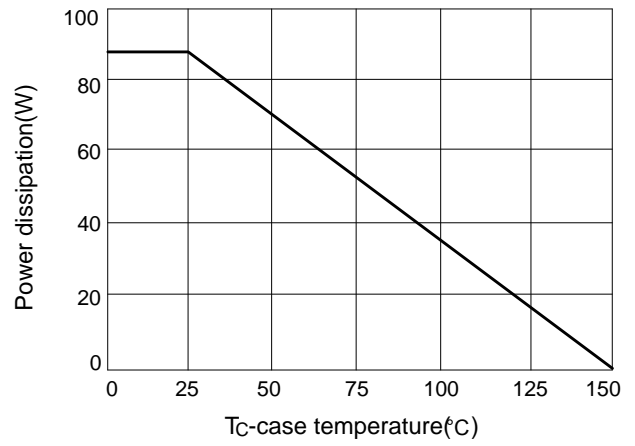


Figure 8: Power de-rating

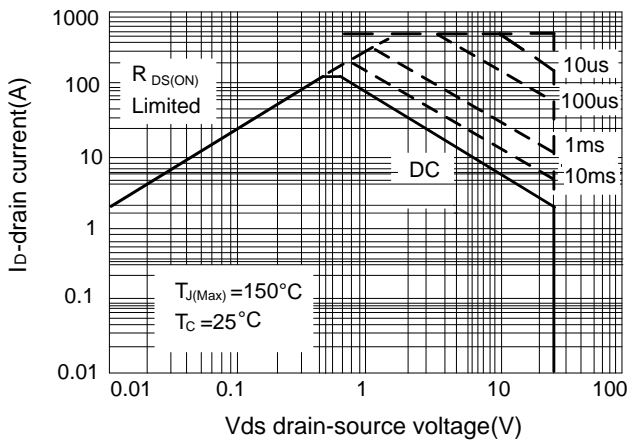


Figure 9: Safe operation area

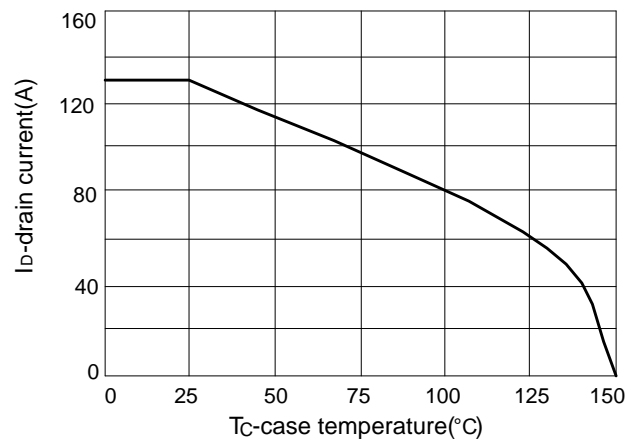


Figure 10: Current de-rating

■ TO-252 PACKAGE OUTLINE DIMENSIONS

