

PRODUCT CHARACTERISTICS

V_{DS}	30V
$R_{DS(ON)} Typ(@V_{GS}=10V)$	9m Ω
$R_{DS(ON)} Typ(@V_{GS}=4.5V)$	14m Ω
I_D	20A

APPLICATIONS

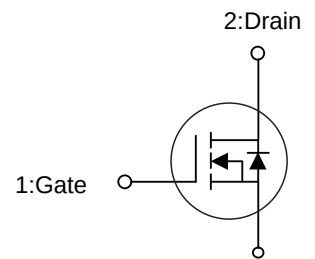
- * Electronic lamp ballasts based on half bridge
- * Load Switching, Quick/Wireless Charge.
- * Motor Driving

FEATURE

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



Symbol



3:Source



TO-252

ORDER INFORMATION

Order Codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT20N03D	TO-252	2500 pieces/Reel

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

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current Continuous($@V_{GS}=10V, T_A=25^{\circ}\text{C}$)	I_D	20	A
Drain Current Continuous($@V_{GS}=10V, T_A=100^{\circ}\text{C}$)	I_D	14.1	A
Drain Current Pulsed	I_{DM}	80	A
Avalanche Energy *	E_{AS}	64	mJ
Power Dissipation	P_D	65	W
Junction Temperature	T_J	+150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55~ +150	$^{\circ}\text{C}$

THERMAL CHARACTERISTICS

Parameter	Symbol	Typ	Unit
Junction to Case	R_{thJC}	1.92	$^{\circ}\text{C/W}$

Note: * EAS condition: $T_J=25^{\circ}\text{C}$, $V_{DS}=20V$, $V_G=10V$, $L=0.5\text{mH}$, $R_g=25\Omega$

■ 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 =250μA	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 =10 A	-	9.7	12	mΩ
		V _{GS} =4.5V,I _D =10 A	-	13	17	mΩ
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} ,I _D =250μA	1	1.65	2.5	V
Dynamic characteristics						
Gate capacitance	R _g	V _{GS} =0V,V _{DS} =0V ,f=1.0MHz	-	2.5	-	Ω
Forward Transconductance	g _{fs}	V _{DS} =10V,I _D =3A	5	-	-	S
Input Capacitance	C _{iss}	V _{DS} =20V,V _{GS} =0V f=1.0MHz	-	821	-	pF
Output Capacitance	C _{oss}		-	78	-	pF
Reverse Transfer Capacitance	C _{rss}		-	69	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	t _{d(ON)}	V _{GS} =10V, V _{DS} =15V, I _D =10 A ,R _G =3Ω	-	5	-	ns
Rise Time	t _r		-	12	-	ns
Turn-off Delay Time	t _{d(OFF)}		-	19	-	ns
Fall Time	t _f		-	6	-	ns
Total Gate Charge	Q _g	I _D =10 A, V _{DS} =15V V _{GS} =10V	-	17	-	nC
Gate to Source Charge	Q _{gs}		-	2.8	-	nC
Gate to Drain("Miller") Charge	Q _{gd}		-	3.9	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I _s		-	-	20	A
Maximum Pulsed Current(Body Diode)	I _{SM}		-	-	80	A
Diode Forward Voltage	V _{SD}	I _{SD} =1A, V _{GS} =0V	-	0.74	1.2	V
Reverse Recovery Time	t _{rr}	I _{SD} =10 A, T _J =25 °C	-	18	-	ns
Reverse Recovery Charge	Q _{rr}	dI /dt=100A/μs	-	10	-	nC

■ TYPICAL CHARACTERISTICS

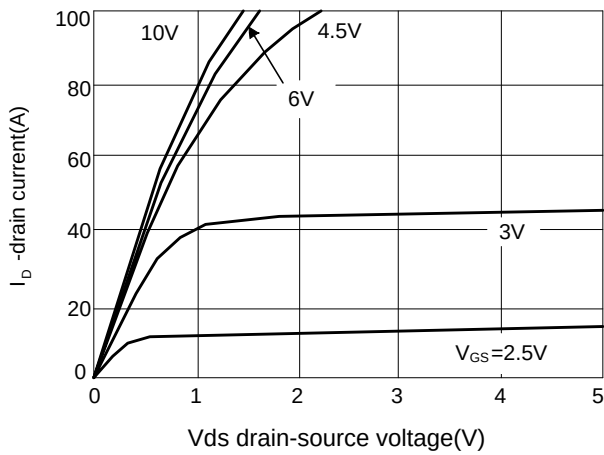


Fig.1 output characteristics

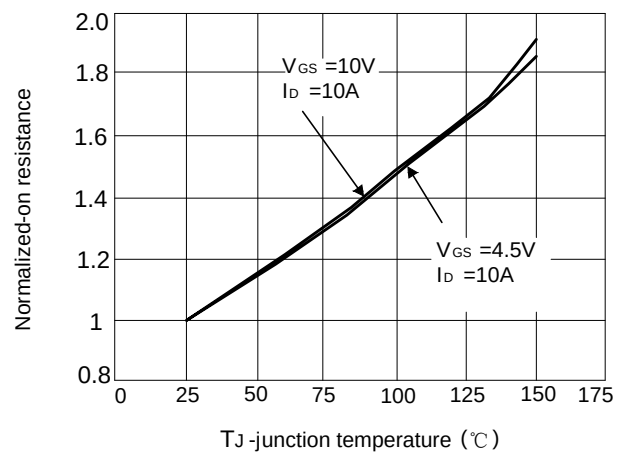


Figure.2 $R_{DS(on)}$ -junction temperature

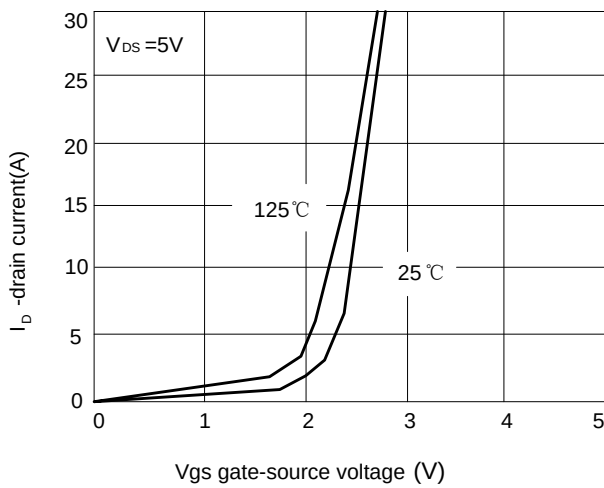


Figure.3 Transfer characteristics

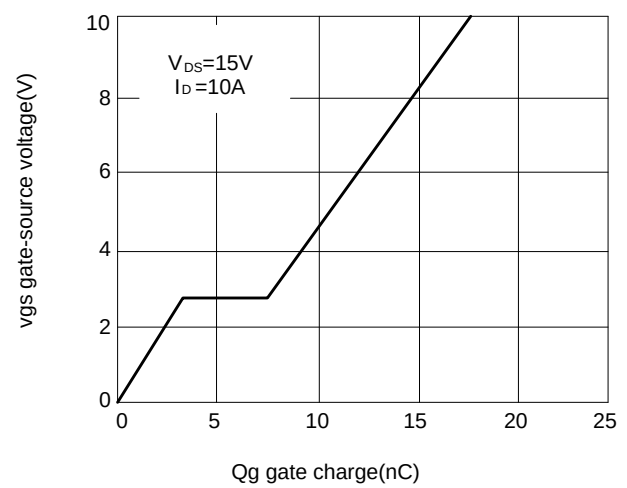


Figure.4 Gate charge

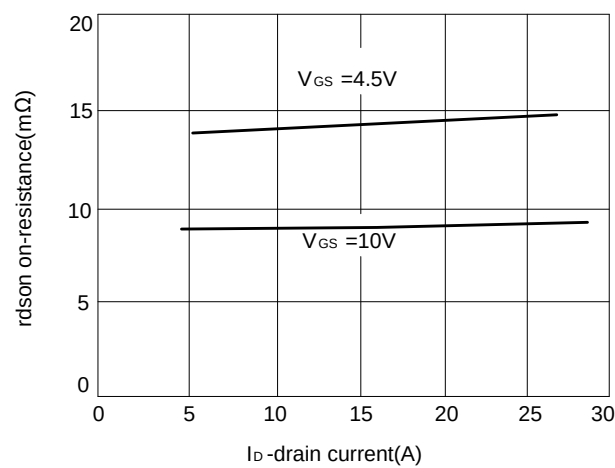


Figure.5 $R_{DS(on)}$ -drain current

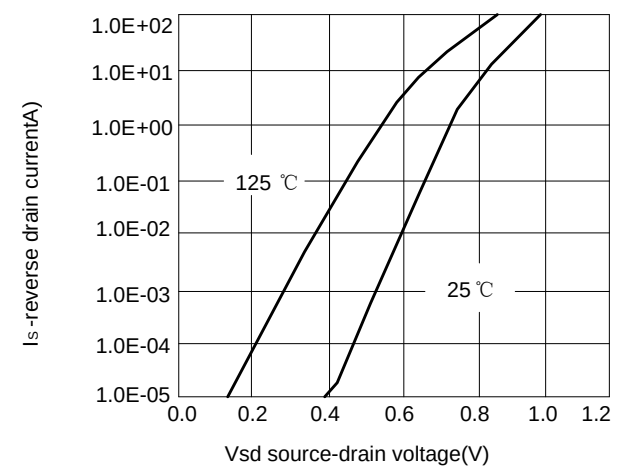


Figure.6 Source-drain diode forward

■ TYPICAL CHARACTERISTICS(Cont.)

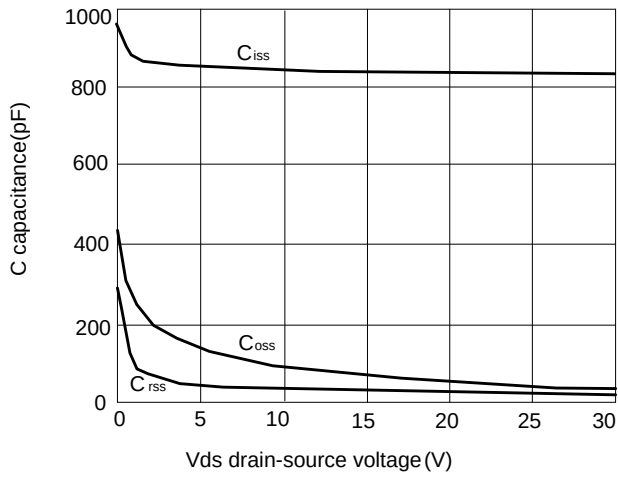


Figure.7 Capacitance vs vds

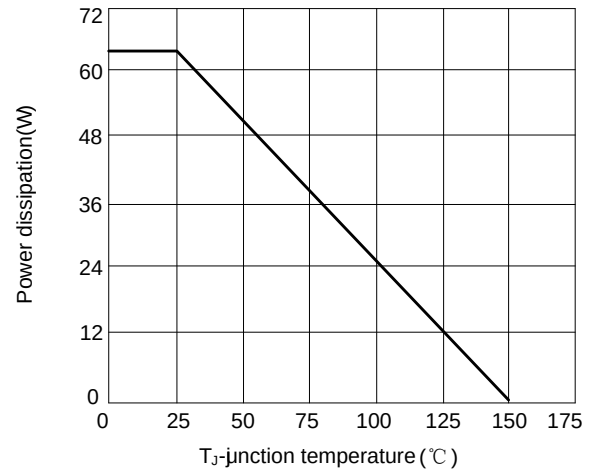


Figure.8 Power de-rating

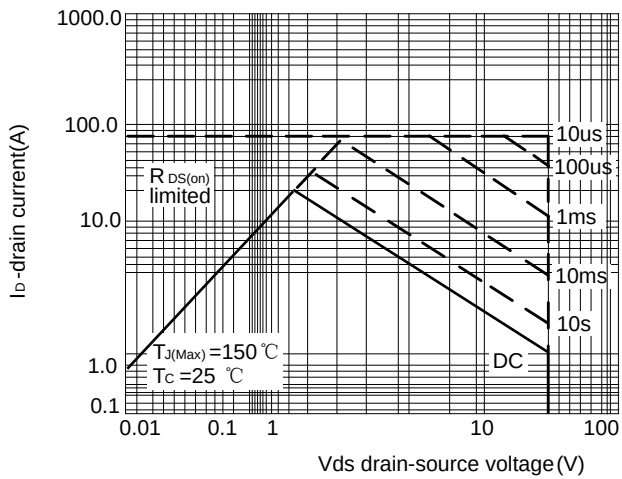


Figure.9 Safe operation area

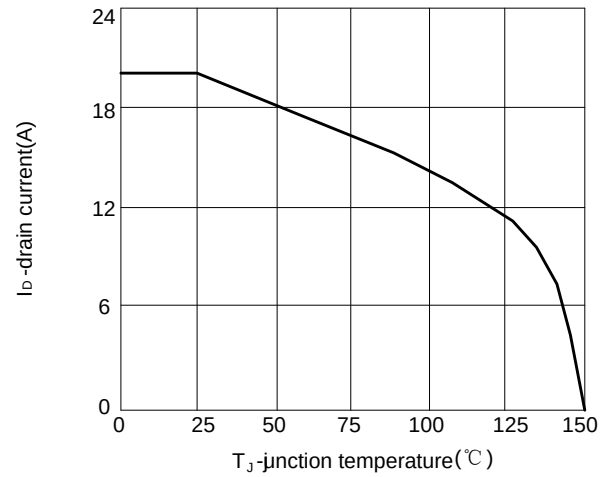


Figure.10 Id current-junction temperature

■ TO-252 PACKAGE OUTLINE DIMENSIONS

