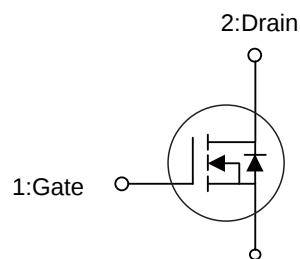


PRODUCT CHARACTERISTICS

V_{DSS}	30V
$R_{DS(ON) Typ(@V_{GS}=10V)}$	7.1m Ω
$R_{DS(ON) Typ(@V_{GS}=4.5V)}$	10.6m Ω
I_D	50A

Symbol



3:Source



TO-252

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

Order Codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT50N03BD	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	50	A
Drain Current Continuous(@ $V_{GS}=10V, T_A=100^{\circ}C$)	I_D	32	A
Drain Current Pulsed	I_{DM}	200	A
Avalanche Energy *	E_{AS}	100	mJ
Power Dissipation	P_D	40	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}	3.13	$^{\circ}C/W$

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 =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 =15 A	-	7.1	8.5	mΩ
		V _{GS} =4.5V, I _D =15 A	-	10.6	14	mΩ
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	1	1.73	2.5	V
Dynamic characteristics						
Gate capacitance	R _g	V _{GS} =0V, V _{DS} =0V ,f=1.0MHz	-	3	-	Ω
Forward Transconductance	g _{fs}	V _{DS} =10V, I _D =3A	-	10.1	-	S
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V f=1.0MHz	-	1100	-	pF
Output Capacitance	C _{oss}		-	120	-	pF
Reverse Transfer Capacitance	C _{rss}		-	110	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	t _{d(ON)}	V _{GS} =10V, V _{DS} =15V, I _D =20 A ,R _G =1.8Ω	-	8	-	ns
Rise Time	t _r		-	10	-	ns
Turn-off Delay Time	t _{d(OFF)}		-	25	-	ns
Fall Time	t _f		-	5	-	ns
Total Gate Charge	Q _g	I _D =20 A, V _{DS} =15V V _{GS} =10V	-	32.3	-	nC
Gate to Source Charge	Q _{gs}		-	4.9	-	nC
Gate to Drain("Miller") Charge	Q _{gd}		-	6.9	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I _s		-	-	50	A
Maximum Pulsed Current(Body Diode)	I _{SM}		-	-	200	A
Diode Forward Voltage	V _{SD}	I _{SD} =1A, V _{GS} =0V	-	0.73	1.2	V
Reverse Recovery Time	t _{rr}	I _{SD} =20 A, T _j =25 °C	-	27	-	ns
Reverse Recovery Charge	Q _{rr}	di /dt=100A/μs	-	20	-	nC

■ TYPICAL CHARACTERISTICS

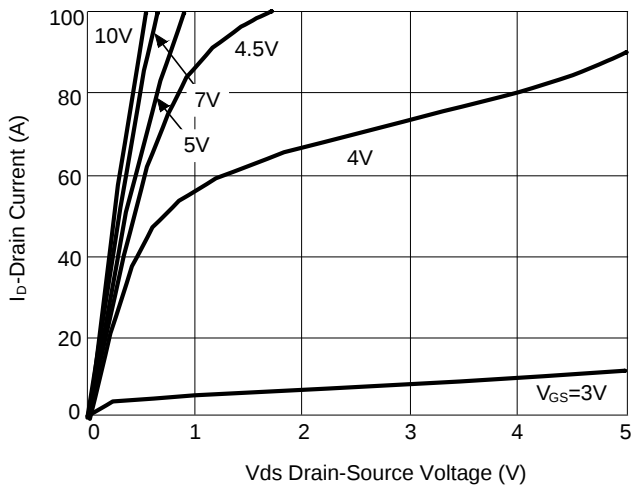


Figure 1: Output Characteristics

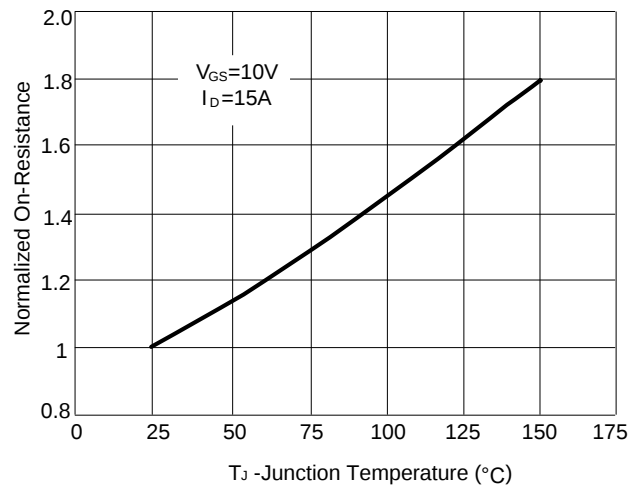


Figure 2: $R_{DS(on)}$ -Junction Temperature

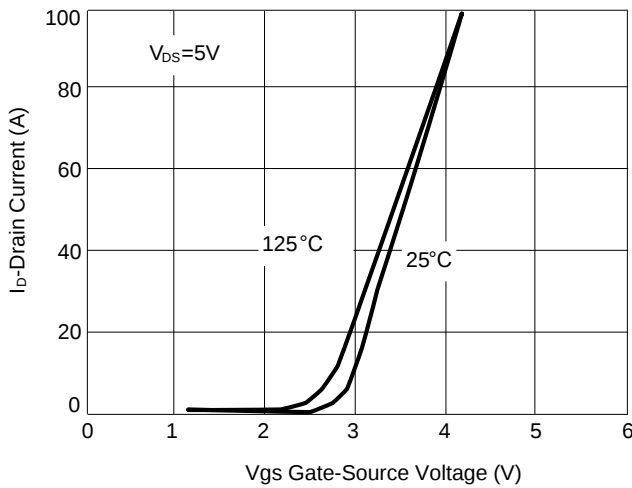


Figure 3: Transfer Characteristics

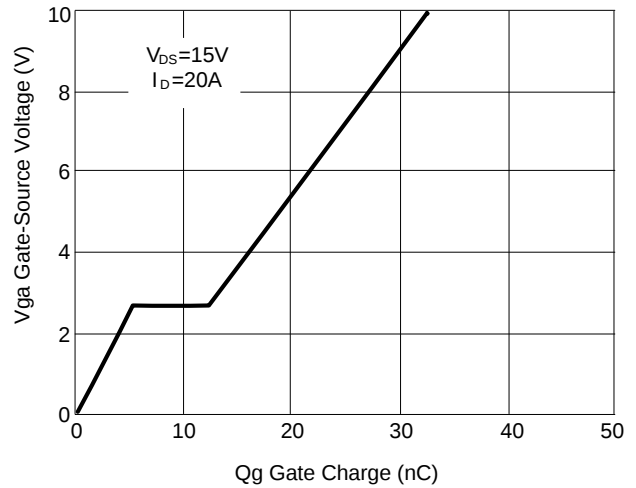


Figure 4: Gate Charge

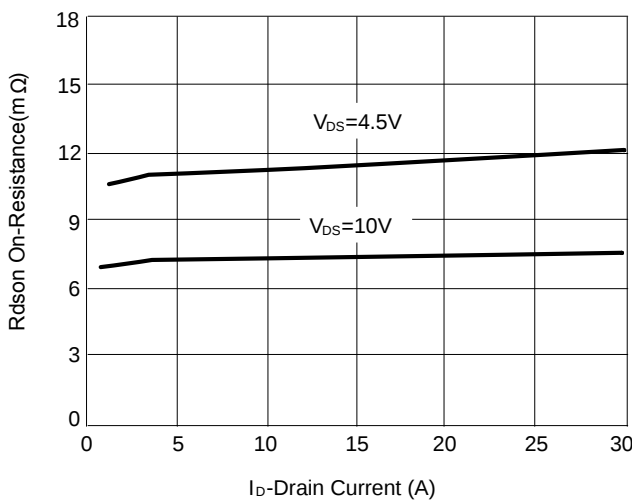


Figure 5: $R_{DS(on)}$ -Drain Current

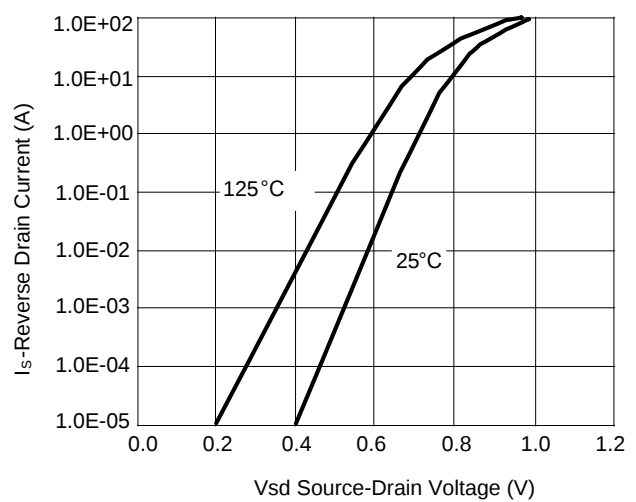


Figure 6: Source-Drain Diode Forward

■ TYPICAL CHARACTERISTICS(Cont.)

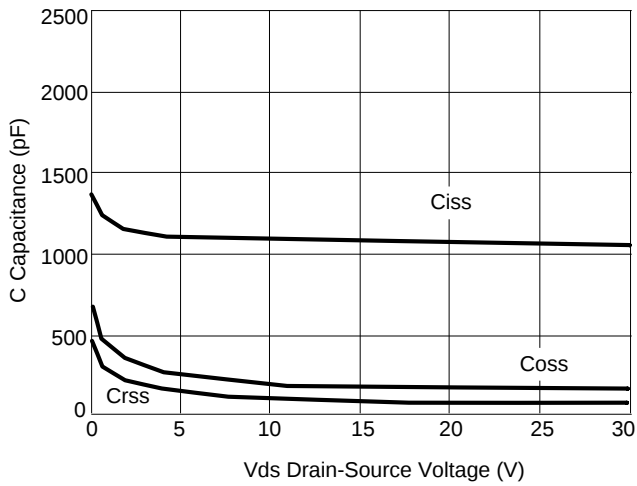


Figure 7: Capacitance vs. V_{ds}

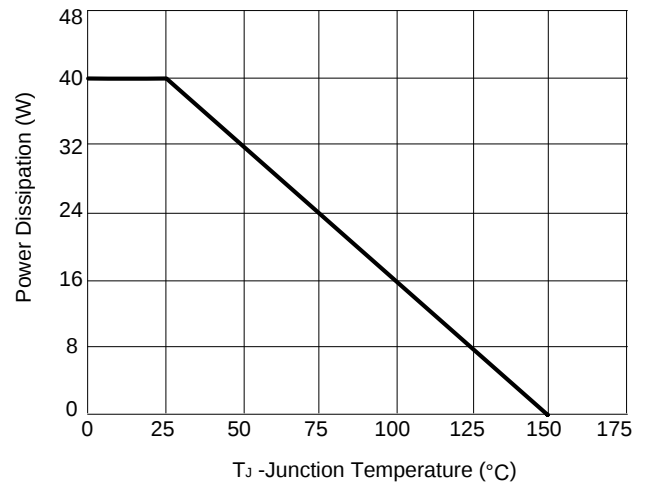


Figure 8: Power De-rating

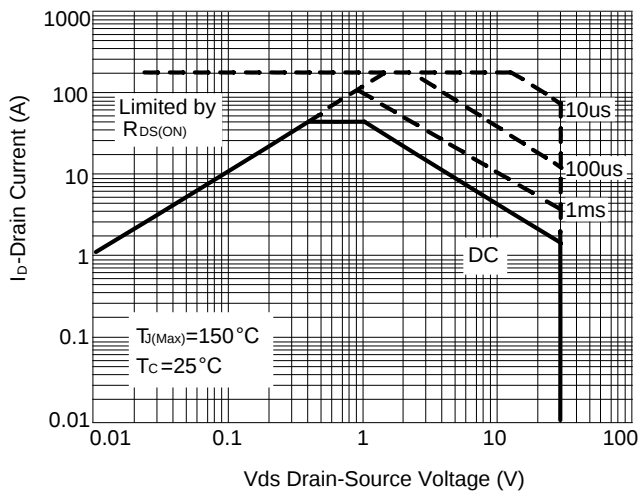


Figure 9: Safe Operation Area

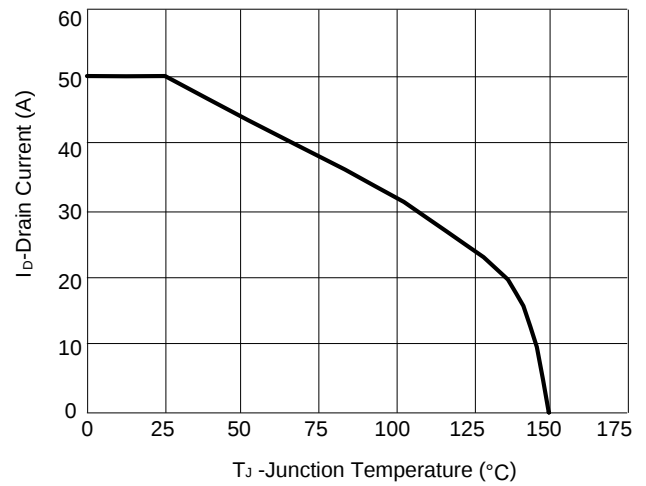


Figure 10: Current De-rating

■ TO-252 PACKAGE OUTLINE DIMENSIONS

