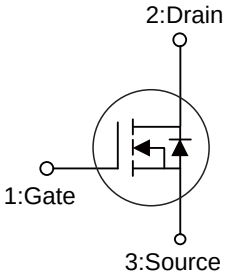
■ PRODUCT CHARACTERISTICS

V_{DSS}	30V
$R_{DS(ON)}$ Typ(@V_{GS}=10V)	7.5mΩ
$R_{DS(ON)}$ Typ(@V_{GS}=4.5V)	12mΩ
I_D	45A

Symbol



■ APPLICATIONS

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

TO-220

■ FEATURE

* Low Gate Charge
* Pb-Free Lead Plating

■ ORDER INFORMATION

Order Codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT45N03A	TO-220	50 pieces/Tube

■ ABSOLUTE MAXIMUM RATINGS(T_A=25°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°C)	I_D	45	A
Drain Current Continuous(@V_{GS}=10V,T_A=100°C)	I_D	30	A
Drain Current Pulsed	I_{DM}	180	A
Avalanche Energy *	E_{AS}	110	mJ
Power Dissipation	P_D	30	W
Junction Temperature	T_J	+150	°C
Storage Temperature	T_{STG}	-55~ +150	°C

■ THERMAL CHARACTERISTICS

Parameter	Symbol	Typ	Unit
Junction to Case	R_{thJC}	4.16	°C/W

Note: * EAS condition: T_J=25°C,V_{DD}=24V,V_G=10V,L=0.5mH,R_g=25Ω

■ ELECTRICAL CHARACTERISTICS (T_C=25°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=15A	-	7.5	8.5	mΩ
		V_{GS}=4.5V,I_D=15A	-	12	14	mΩ
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS},I_D=250μA	1	1.68	2.5	V
Dynamic characteristics						
Gate Resistance	R_g	V_{GS}=0V,V_{DS}=0V ,f=1.0MHz	-	2.1	-	Ω
Forward Transconductance	g_{fs}	V_{DS}=10V,I_D=3A	10	-	-	S
Input Capacitance	C_{iss}	V_{DS}=20V,V_{GS}=0V f=1.0MHz	-	1200	-	pF
Output Capacitance	C_{oss}		-	160	-	pF
Reverse Transfer Capacitance	C_{rss}		-	136	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	$t_{d(ON)}$	V_{GS}=10V, V_{DS}=15V, I_D=20A ,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}=20A, T_J=25°C dI/dt=100A/μs	-	27	-	ns
Reverse Recovery Charge	Q_{rr}		-	20	-	nC

■ TYPICAL CHARACTERISTICS

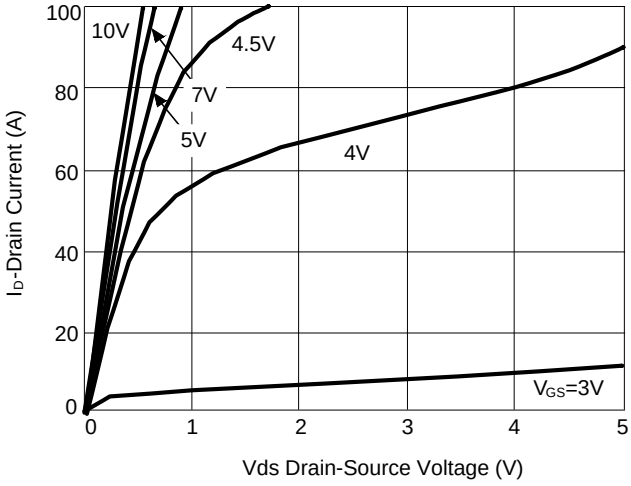


Figure 1: Output Characteristics

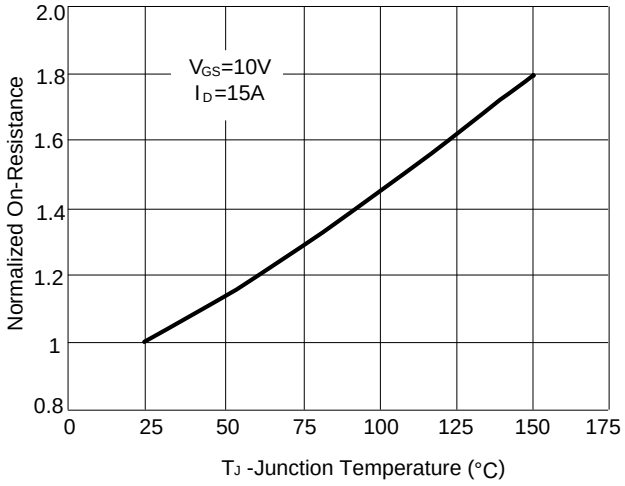


Figure 2: Rdson-Junction Temperature

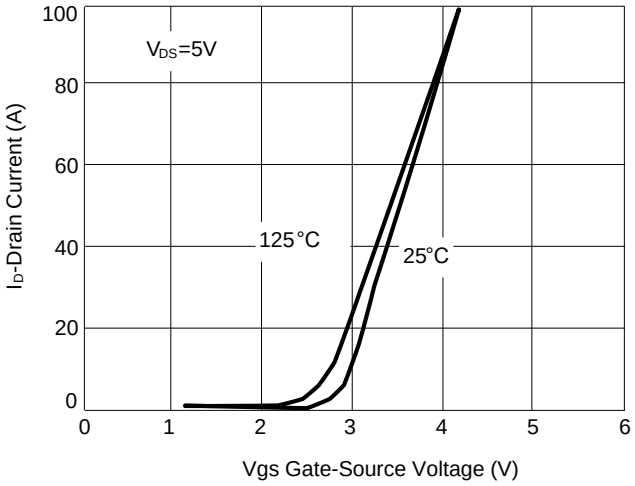


Figure 3: Transfer Characteristics

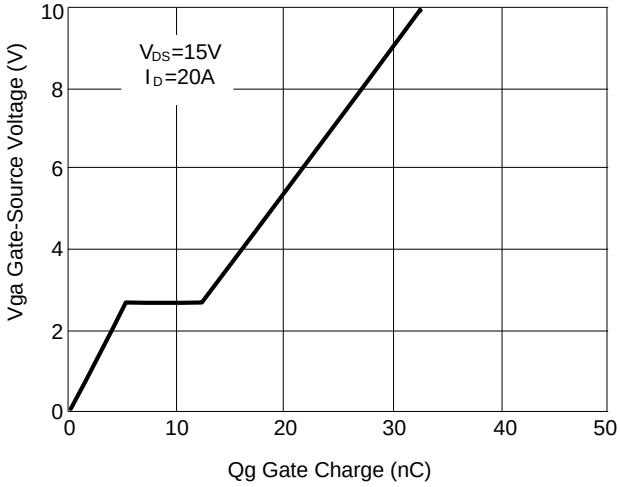


Figure 4: Gate Charge

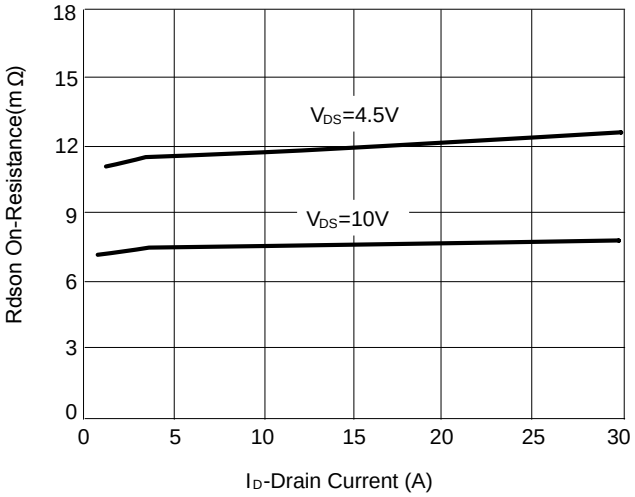


Figure 5: Rdson-Drain Current

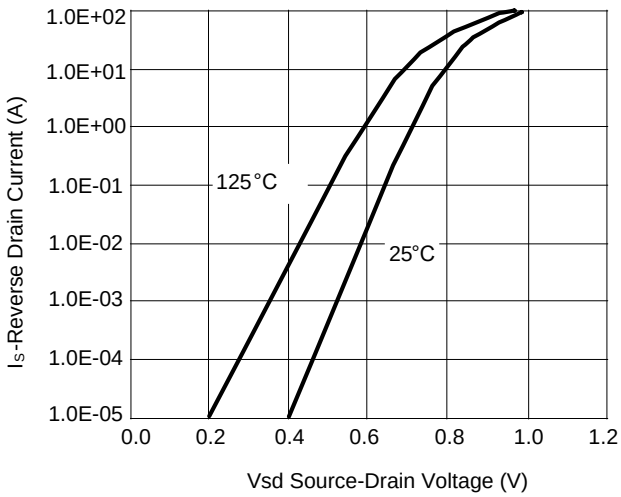


Figure 6: Source-Drain Diode Forward

■ TYPICAL CHARACTERISTICS(Cont.)

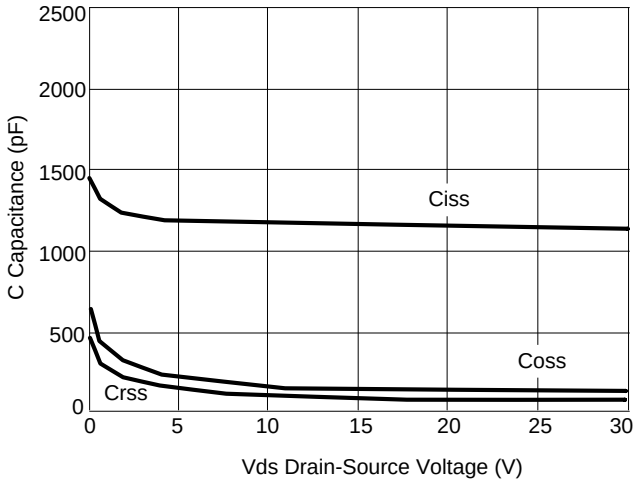


Figure 7: Capacitance vs. Vds

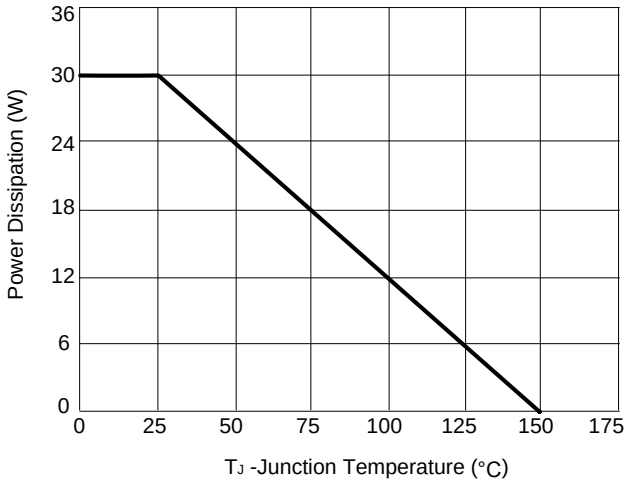


Figure 8: Power De-rating

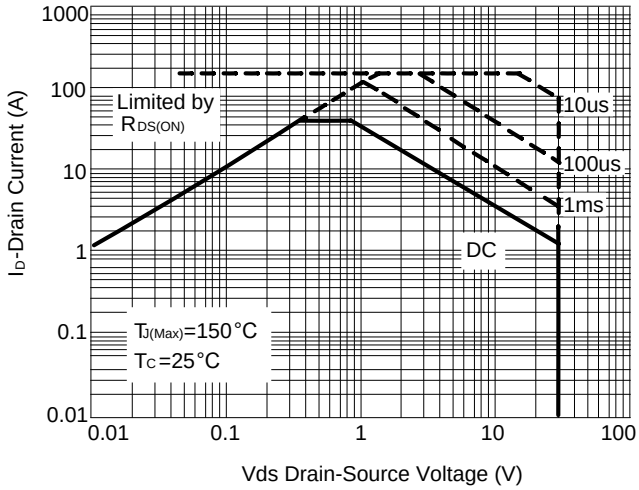


Figure 9: Safe Operation Area

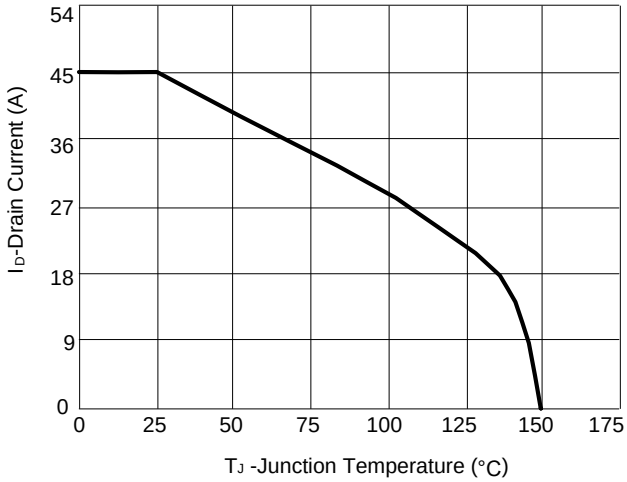


Figure 10: Current De-rating

■ TO-220 PACKAGE OUTLINE DIMENSIONS