

PRODUCT CHARACTERISTICS

V_{DS}	100V
$R_{DS(ON)}$ Typ(@ $V_{GS}=10V$)	4.3m Ω
Qg@typ	84.7nC
I_D	120A

APPLICATIONS

- * High efficiency switch mode power supplies
- * Electronic lamp ballasts based on half bridge
- * LED power supplies

FEATURE

- * High Switching Speed
- * Improved dv/dt capability

ORDER INFORMATION

Order Codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT120N10F	TO-220F	50 pieces/Tube

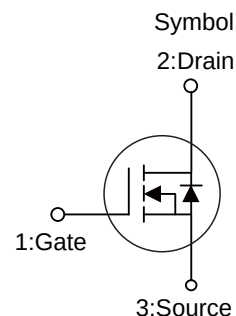
ABSOLUTE MAXIMUM RATINGS($T_A=25^{\circ}C$, unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	120	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current Continuous(@ $V_{GS}=10V$, $T_A=25^{\circ}C$)	I_D	120	A
Drain Current Pulsed	I_{DM}	480	A
Avalanche Energy *	E_{AS}	756	mJ
Peak Diode Recovery dv/dt	dv/dt	5.0	V/ns
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 Ambient	R_{thJA}	62.5	$^{\circ}C/W$
Junction to Case	R_{thJC}	3.12	$^{\circ}C/W$

Note: * EAS condition: $T_J=25^{\circ}C$, $V_{DD}=50V$, $V_G=10V$, $L=0.5mH$, $R_g=25\Omega$



■ 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	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 _{DS} =0V, V _{GS} =+30V	-	-	100	nA
Gate to Source Reverse Leakage	I _{GSS(R)}	V _{DS} =0V, V _{GS} =-30V	-	-	-100	nA
On characteristics						
Drain to Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A	-	4.3	5	mΩ
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	2	-	4	V
Dynamic characteristics						
Gate capacitance	R _g	V _{GS} =0V, V _{DS} =0V ,f=1.0MHz	-	1.8	-	Ω
Forward Transconductance	g _{fs}	V _{DS} =5V, I _D =5A	-	19	-	S
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V f=1.0MHz	-	4646	-	pF
Output Capacitance	C _{oss}		-	580	-	pF
Reverse Transfer Capacitance	C _{rss}		-	30	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	t _{d(ON)}	I _D =20 A, V _{DS} =50V R _G =4.7Ω , V _{GS} =10V	-	16	-	ns
Rise Time	t _r		-	67	-	ns
Turn-off Delay Time	t _{d(OFF)}		-	45	-	ns
Fall Time	t _f		-	14	-	ns
Total Gate Charge	Q _g	I _D =20 A, V _{DS} =50V V _{GS} =10V	-	84.7	-	nC
Gate to Source Charge	Q _{gs}		-	30.6	-	nC
Gate to Drain("Miller") Charge	Q _{gd}		-	18.3	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I _s		-	-	120	A
Maximum Pulsed Current(Body Diode)	I _{SM}		-	-	480	A
Diode Forward Voltage	V _{SD}	I _{SD} =1A, V _{GS} =0V	-	0.69	1.2	V
Reverse Recovery Time	t _{rr}	I _{SD} =20 A, T _J =25 °C	-	60	-	ns
Reverse Recovery Charge	Q _{rr}	di /dt=100A/μs	-	140	-	nC

■ TYPICAL CHARACTERISTICS

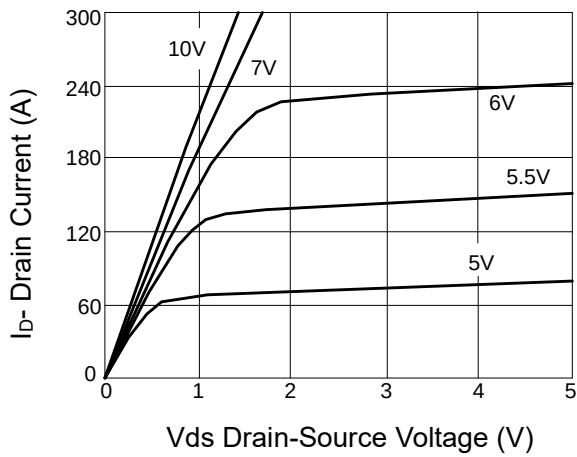


Figure 1: Output characteristics

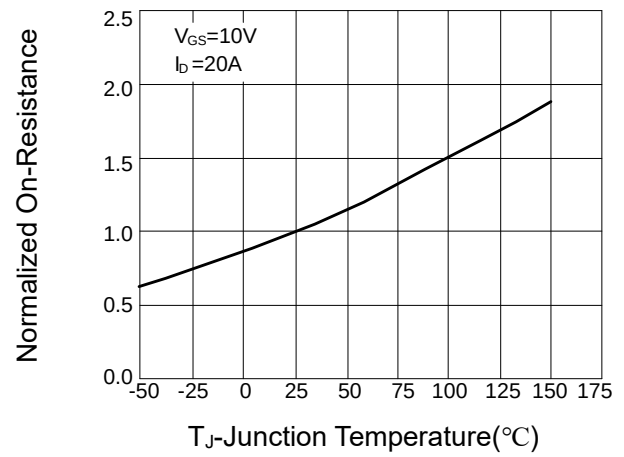


Figure 2: $R_{DS(on)}$ -junction temperature

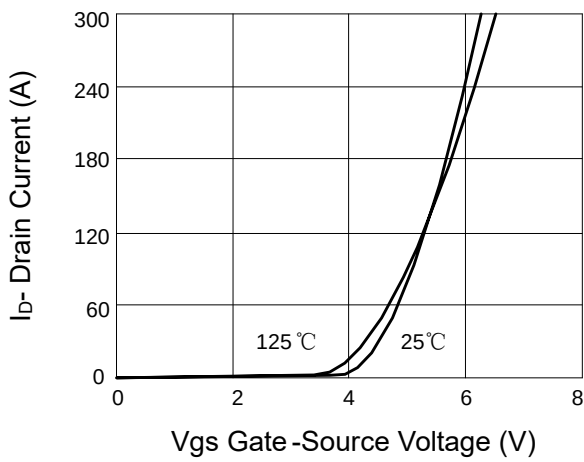


Figure 3: Transfer characteristics

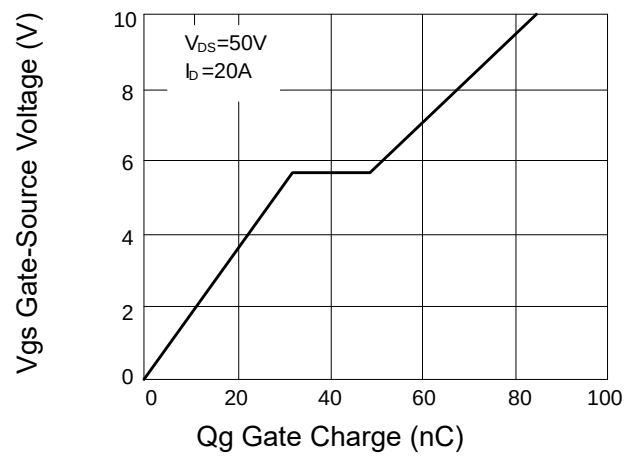


Figure 4: Gate charge

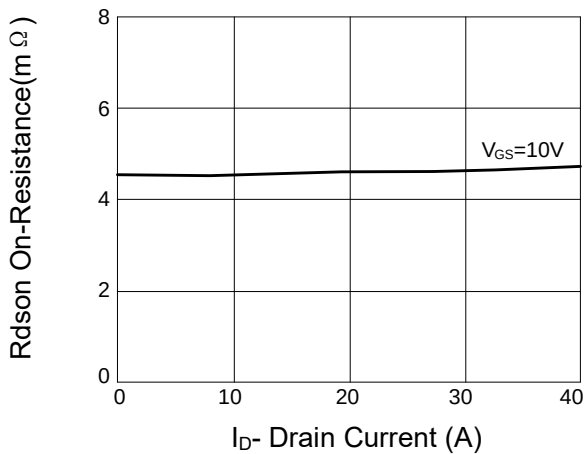


Figure 5: $R_{DS(on)}$ -drain current

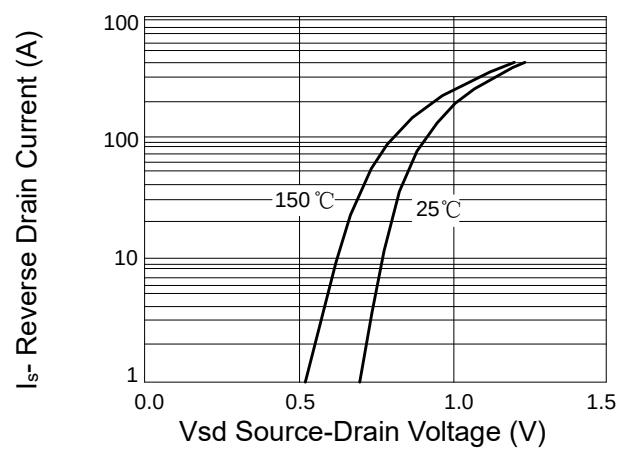


Figure 6: Source-drain diode forward

■ TYPICAL CHARACTERISTICS(Cont.)

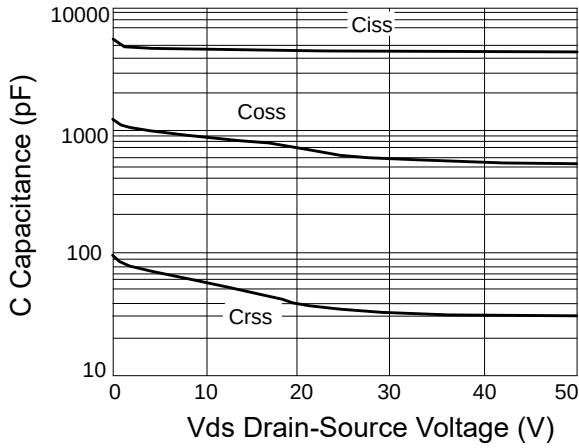


Figure 7: Capacitance vs vds

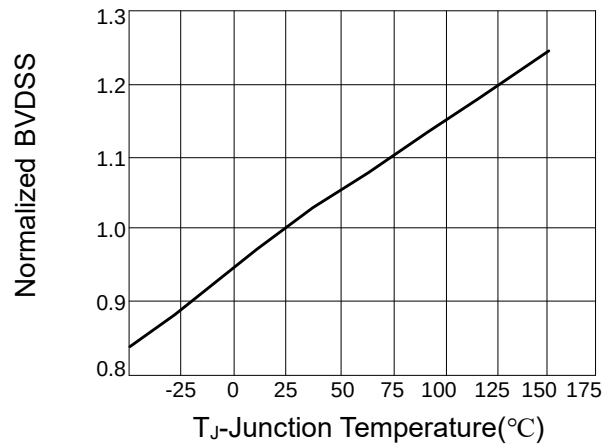


Figure 8: BVdss vs. junction temperature

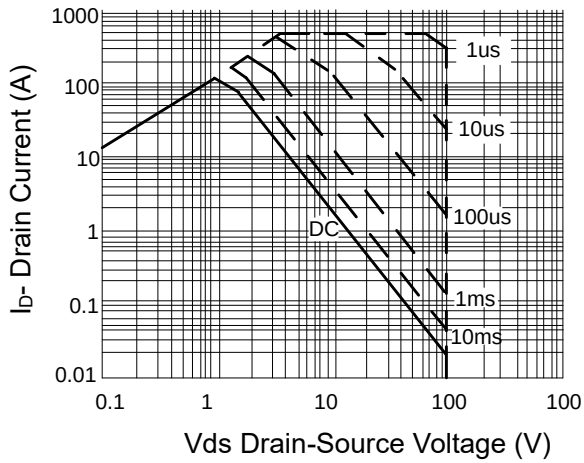


Figure 9: Output characteristics

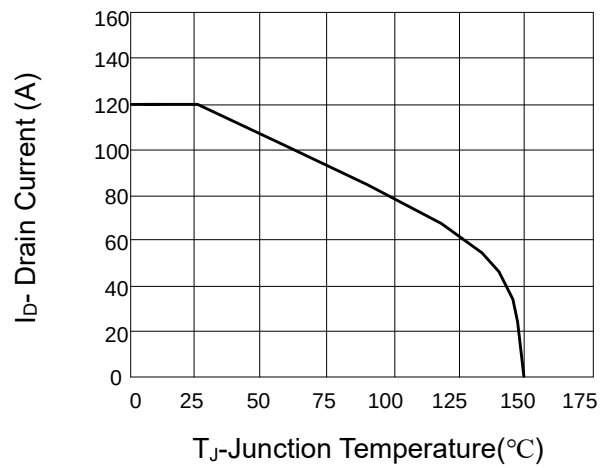


Figure 10: Current de-rating

■ TO-220F PACKAGE OUTLINE DIMENSIONS

