

■ PRODUCT CHARACTERISTICS

V_{DSS}	650V
$R_{DS(ON)}$ Typ(@ $V_{GS}=10V$)	0.35 Ω
Q_g @typ	20nC
I_D	11A

■ 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		TO-220F	50 pieces/Tube

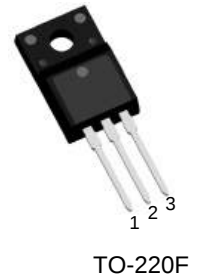
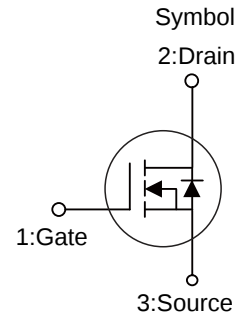
■ ABSOLUTE MAXIMUM RATINGS($T_A=25^\circ C$, unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DSS}	650	V
Gate-Source Voltage	V_{GSS}	± 30	V
Drain Current Continuous(@ $V_{GS}=10V$, $T_A=25^\circ C$)	I_D	11	A
Drain Current Pulsed	I_{DM}	44	A
Avalanche Energy *	E_{AS}	500	mJ
Peak Diode Recovery dv/dt	dv/dt	5.0	V/ns
Power Dissipation	P_D	35	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}	3.5	$^\circ C/W$

Note: * EAS condition: $T_J=25^\circ C$, $V_{DD}=50V$, $V_G=10V$, $L=20mH$, $R_g=25\Omega$



■ 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	650	-	-	V
Drain to Source Leakage Current	I _{DSS}	V _{DS} =650V, 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 =5.5A	-	0.35	0.38	Ω
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	-	9.9	-	Ω
Forward Transconductance	g _{fs}	V _{DS} =10V, I _D =3A	5	-	-	S
Input Capacitance	C _{iss}	V _{DS} =40V, V _{GS} =0V f=1.0MHz	-	772	-	pF
Output Capacitance	C _{oss}		-	106	-	pF
Reverse Transfer Capacitance	C _{rss}		-	0.4	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	t _{d(ON)}	I _D =5.5A, V _{DS} =325V R _G =10 Ω , V _{GS} =10V	-	19.6	-	ns
Rise Time	t _r		-	36.5	-	ns
Turn-off Delay Time	t _{d(OFF)}		-	39	-	ns
Fall Time	t _f		-	9.5	-	ns
Total Gate Charge	Q _g	I _D =5.5 A, V _{DS} =325V V _{GS} =10V	-	20	-	nC
Gate to Source Charge	Q _{gs}		-	3.6	-	nC
Gate to Drain("Miller") Charge	Q _{gd}		-	6.3	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I _s		-	-	11	A
Maximum Pulsed Current(Body Diode)	I _{SM}		-	-	44	A
Diode Forward Voltage	V _{SD}	I _{SD} =1A, V _{GS} =0V	-	0.73	1.2	V
Reverse Recovery Time	t _{rr}	I _{SD} =5.5 A, T _j =25 °C	-	140	-	ns
Reverse Recovery Charge	Q _{rr}	di /dt=100A/μs	-	800	-	nC

■ TYPICAL CHARACTERISTICS

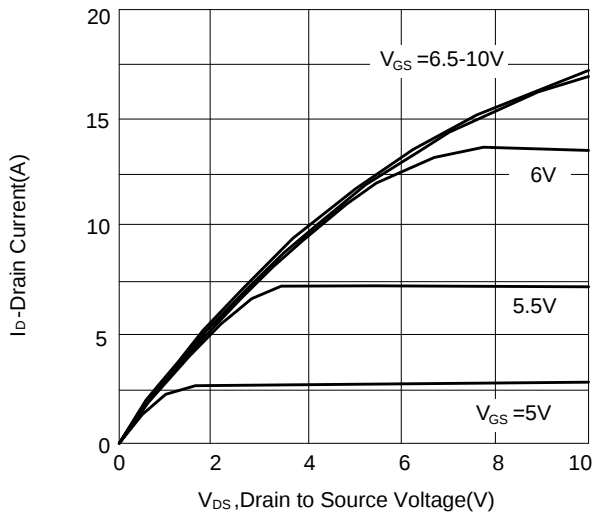


Figure 1: Output Characteristics

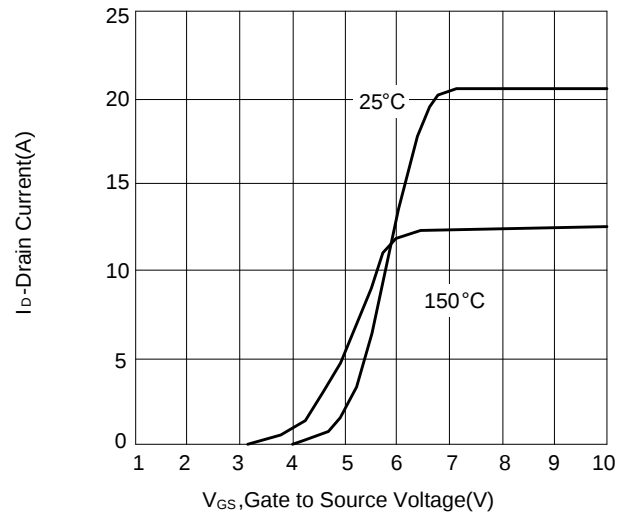


Figure 2: Transfer Characteristics

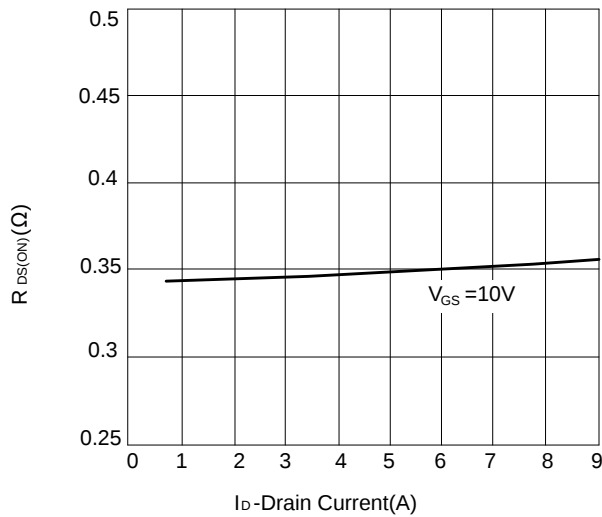


Figure 3: Drain to Source On-Resistance vs Drain Current

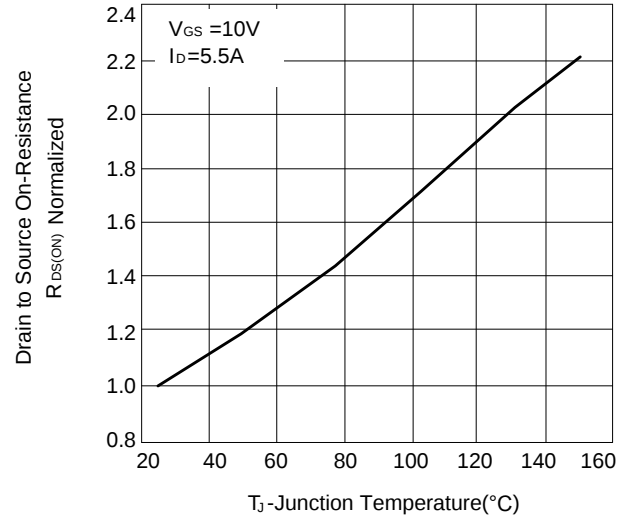


Figure 4: Drain to Source On-Resistance vs Junction Temperature

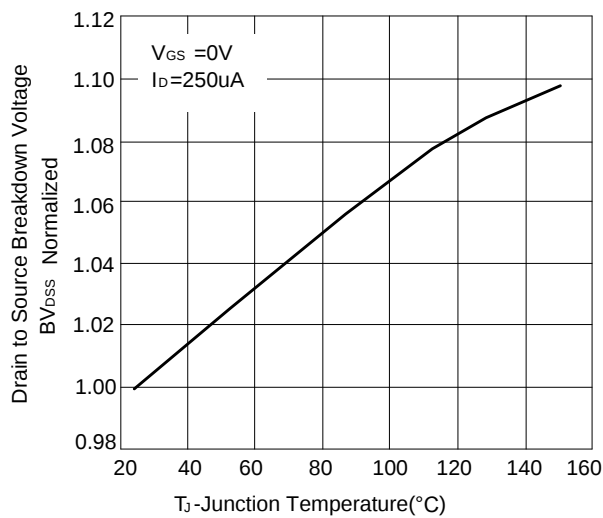


Figure 5: Breakdown Voltage vs Junction Temperature

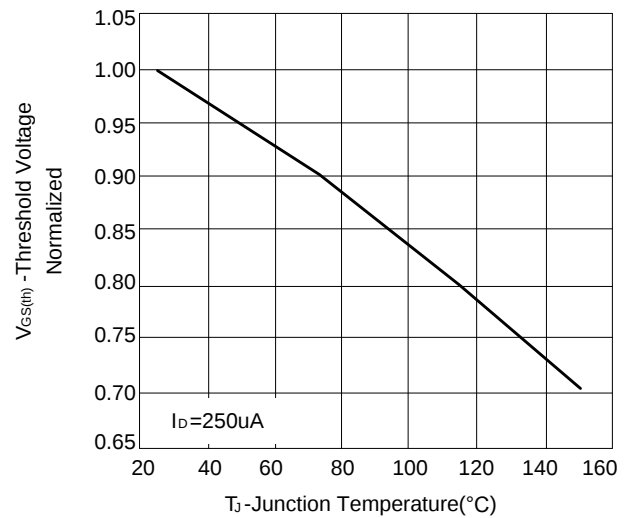


Figure 6: Threshold Voltage vs Junction Temperature

■ TYPICAL CHARACTERISTICS(Cont.)

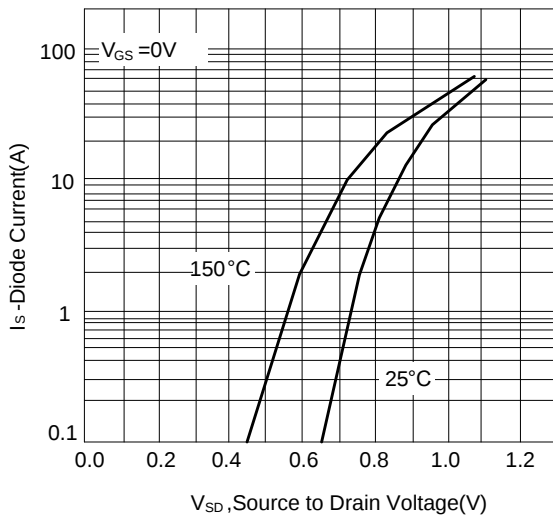


Figure 7: Body Diode Characteristics

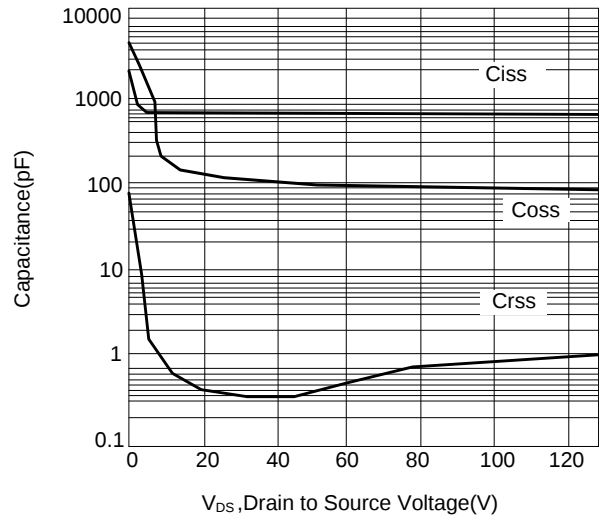


Figure 8: Capacitance vs Drain to Source Voltage

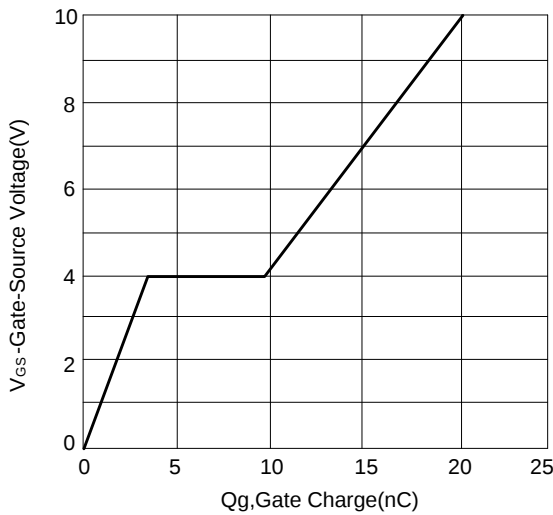


Figure 9: Gate Charge vs Gate to Source Voltage

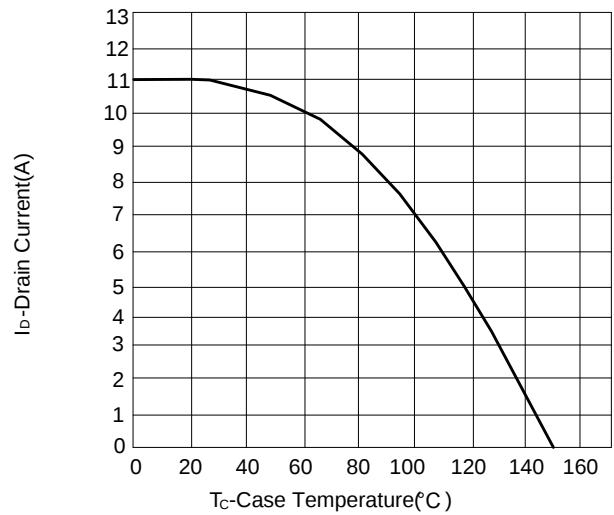


Figure 10: Continuous Drain vs Case Temperature

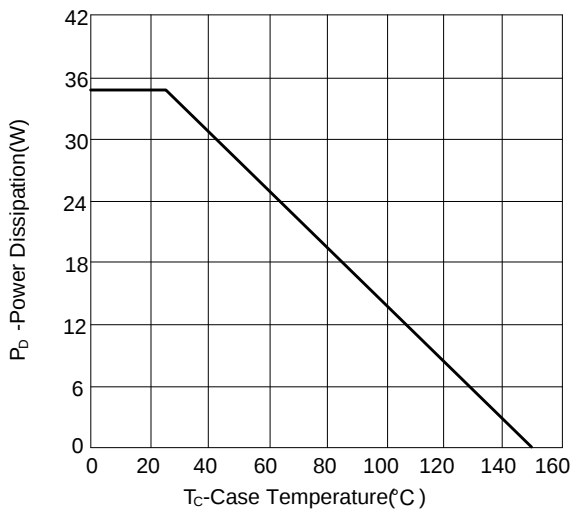


Figure 11: Power Dissipation vs Case Temperature

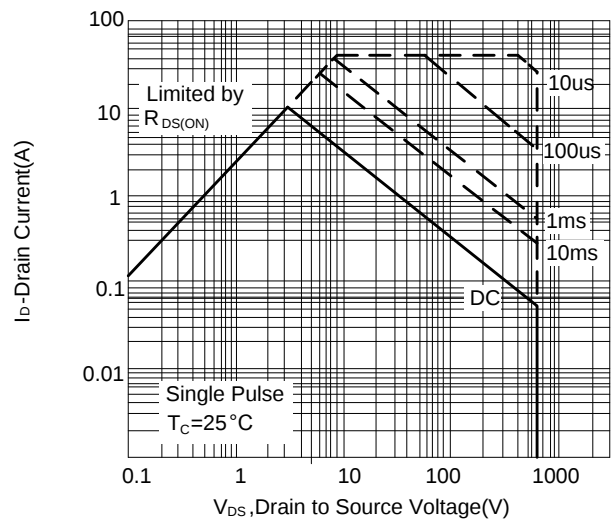


Figure 12: Safe operating Area

■ TO-220F PACKAGE OUTLINE DIMENSIONS

