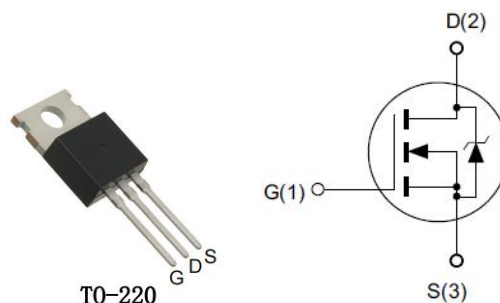


Features

- ◆ 600V, 12A, $R_{DS(ON)}$ (Typ.) = 0.55 Ω , @V_{GS} = 10V.
- ◆ Low Crss
- ◆ Fast Switching
- ◆ 100% Avalanche Tested

Application

- ◆ Adaptor
- ◆ Standby Power
- ◆ Switching power supply
- ◆ LED Power



Absolute Maximum Ratings T_c = 25° C unless otherwise noted

Symbol	Parameter	Rating	Unit
V _{DS}	Drain-Source Voltage ^a	600	V
V _{GS}	Gate-Source Voltage	± 30	V
I _D	Drain Current-Continuous, T _C = 25°C	12	A
	Drain Current-Continuous, T _C = 100°C	7.5	A
I _{DM}	Drain Current-Pulsed ^b	48	A
P _D	Maximum Power Dissipation @ T _J = 25°C	150	W
dv/dt	Peak Diode Recovery dv/dt ^c	5	V/ns
E _{AS}	Single Pulsed Avalanche Energy ^d	500	mJ
T _J , T _{STG}	Operating and Store Temperature Range	150, -55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Value	Unit
R _{θJC}	Thermal Resistance, Junction to Case	0.83	°C/W
R _{θJA}	Thermal Resistance, Junction to Ambient	62.5	°C/W

Electrical Characteristics T_J = 25° C unless otherwise noted

■ Off Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	600	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 600V, V _{GS} = 0V	-	-	1	μA
I _{GSS}	Forward Gate Body Leakage Current	V _{DS} = 0V, V _{GS} = ±30V	-	-	±100	nA

■ On Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	-	4	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS} = 10V, I_D = 6A$	-	0.55	0.75	Ω

■ Dynamic Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
C_{iss}	Input Capacitance	$V_{DS} = 25V,$ $V_{GS} = 0V,$ $f = 1.0MHz$	-	2055	-	pF
C_{oss}	Output Capacitance		-	180	-	pF
C_{rss}	Reverse Transfer Capacitance		-	7	-	pF

■ On Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$t_{d(on)}$	Turn-On Delay Time	$V_{DD} = 300V, I_D = 12A,$ $R_G = 10\Omega, V_{GS} = 10V$	-	27	-	ns
t_r	Turn-On Rise Time		-	25	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	63	-	ns
t_f	Turn-Off Fall Time		-	39	-	ns
Q_g	Total Gate Charge	$V_{DS} = 480V, I_D = 12A,$ $V_{GS} = 10V$	-	40	-	nC
Q_{gs}	Gate-Source Charge		-	9.8	-	nC
Q_{gd}	Gate-Drain Charge		-	14.5	-	nC

■ Drain-Source Diode Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
I_S	Drain-Source Diode Forward Continuous Current	$V_{GS} = 0V$	-	-	12	A
I_{SM}	Maximum Pulsed Current	$V_{GS} = 0V$	-	-	48	A
V_{SD}	Drain-Source Diode Forward Voltage	$V_{GS} = 0V, I_S = 12A$	-	-	1.4	V
T_{rr}	Body Diode Reverse Recovery Time	$I_S = 12A, V_{GS} = 0V$ $di_F/dt = 100A/\mu s$	-	576	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	3.98	-	μC

Notes:

- $T_J = -55^\circ C$ to $+150^\circ C$.
- Repetitive rating; pulse width limited by maximum junction temperature.
- Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$.
- $L = 10mH, V_{DD} = 50V, I_{as} = 10A, R_g = 25\Omega$ Starting $T_J = 25^\circ C$.

Characteristic Curve

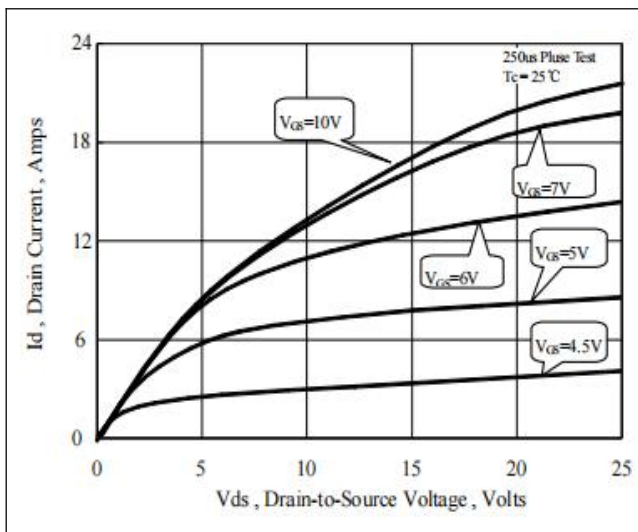


Figure 1. Typical Output Characteristics

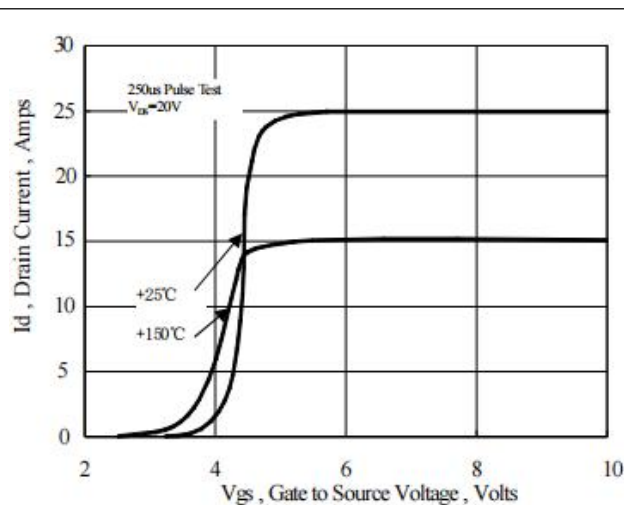


Figure 2. Typical Transfer Characteristics

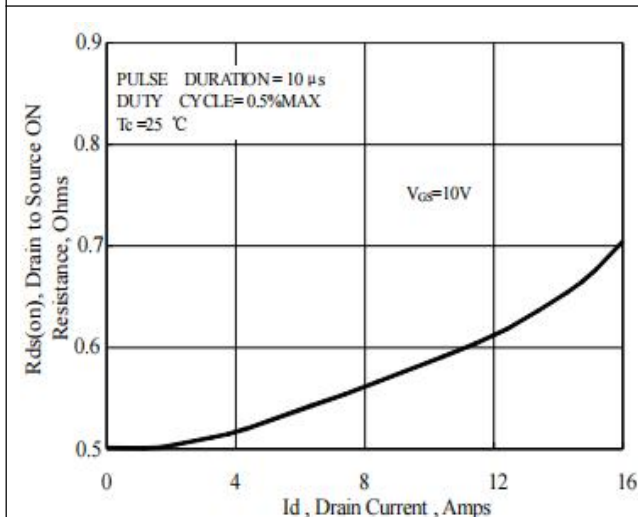


Figure 3. On-Resistance vs. Drain Current

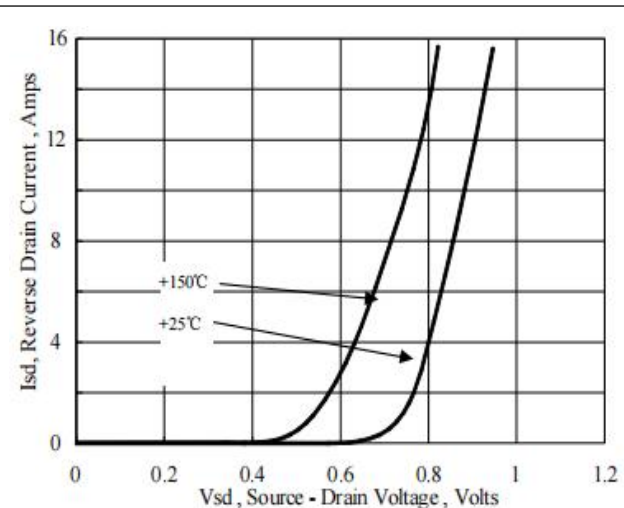


Figure 4. Body-Diode Characteristics

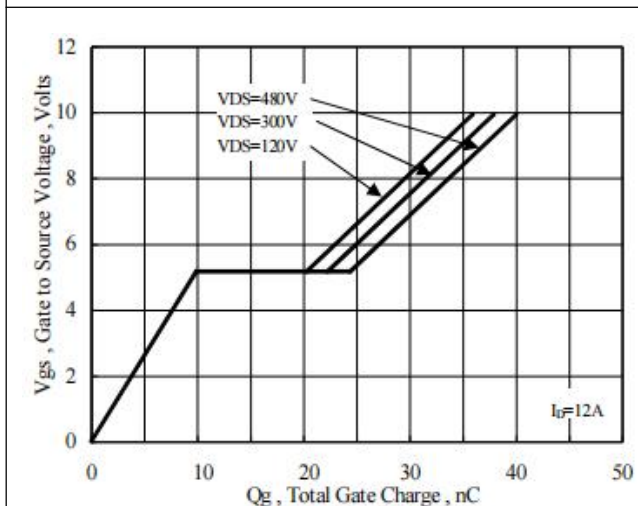


Figure 5. Gate-Charge Characteristics

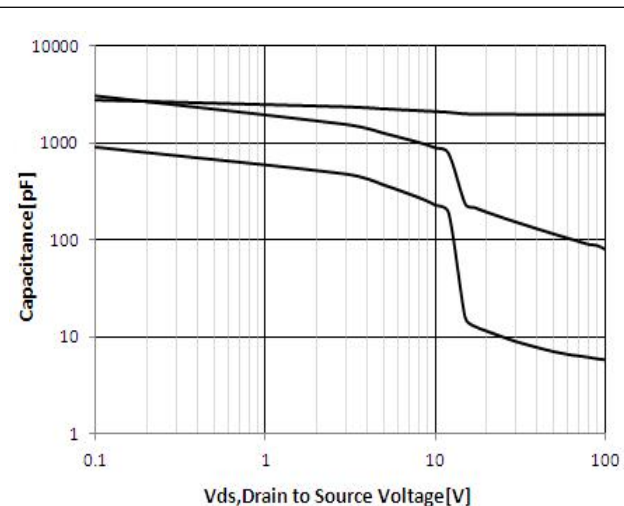


Figure 6. Capacitance Characteristics

■ Characteristic Curve

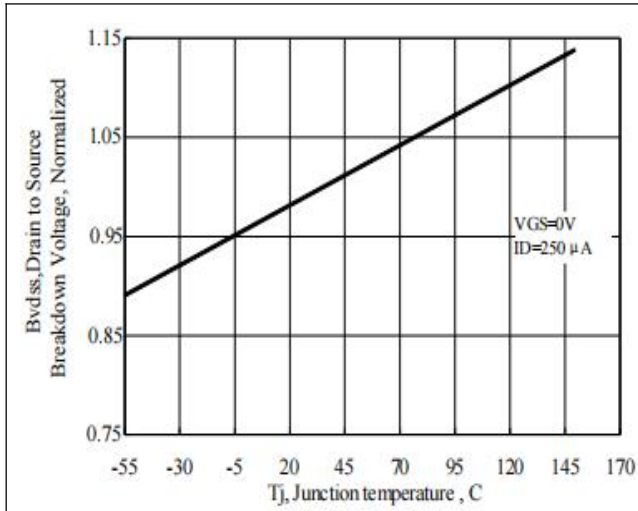


Figure 7. Normalized Breakdown voltage vs. Junction Temperature

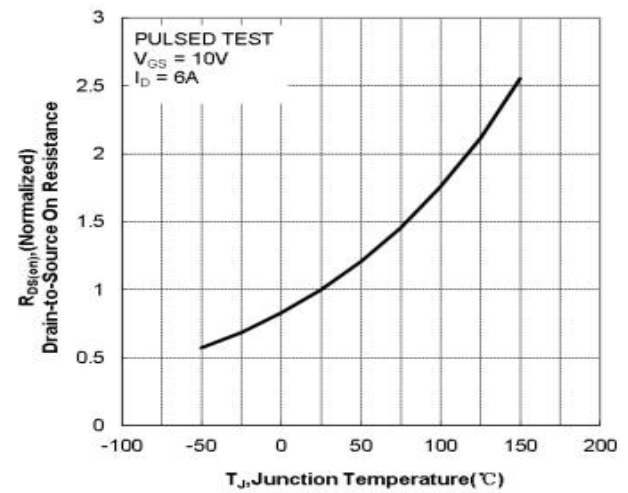


Figure 8. Normalized on Resistance vs. Junction Temperature

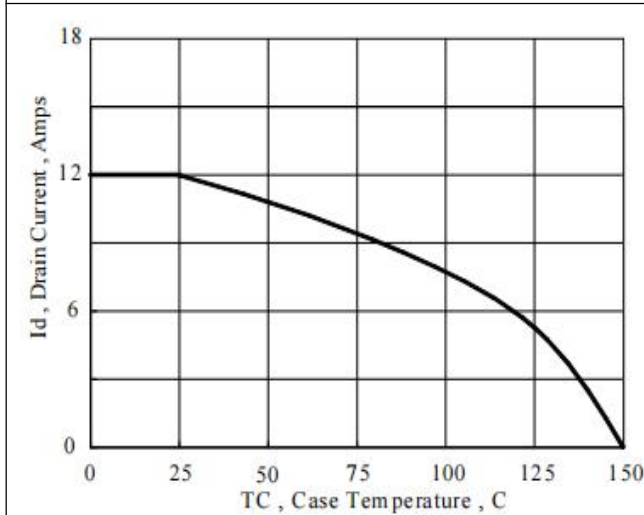


Figure 9: Maximum Continuous Drain Current vs. Case Temperature

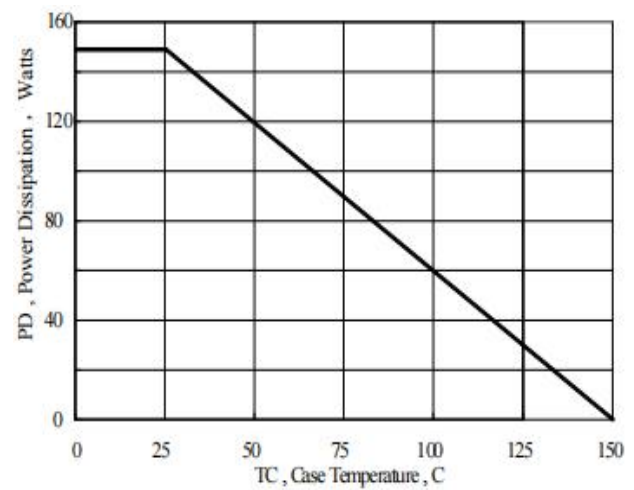


Figure 10: Maximum Power Dissipation vs Case Temperature

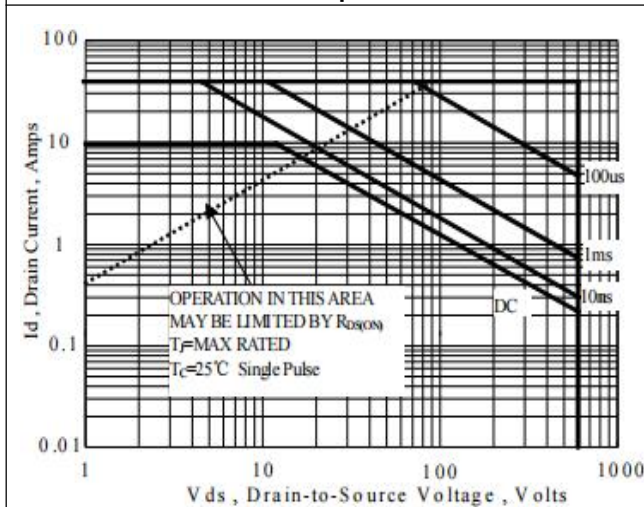


Figure 11. Maximum Safe Operating Area

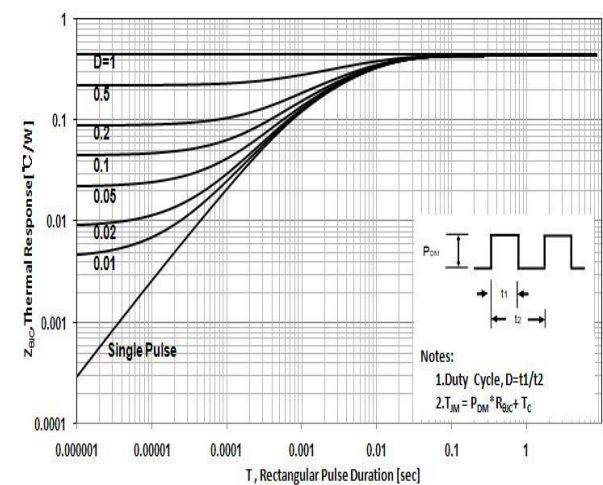


Figure 12: Normalized Maximum Transient Thermal Impedance

■ Package Information

