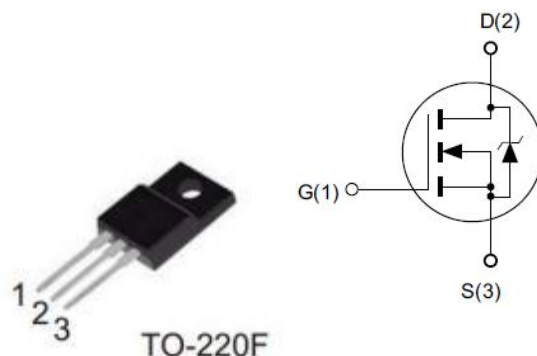


Features

- ◆ 700V, 7A, $R_{DS(ON)}(Typ.) = 1.18\Omega @ V_{GS} = 10V$.
- ◆ Low Gate Charge
- ◆ Fast Switching
- ◆ 100% Single Pulse avalanche energy Test
- ◆ Low Reverse transfer capacitances



Application

- ◆ Power switch circuit of adaptor and charger

Absolute Maximum Ratings $T_c = 25^\circ C$ unless otherwise noted

Symbol	Parameter	Limit	Unit
V_{DS}	Drain-Source Voltage ^a	700	V
V_{GS}	Gate-Source Voltage	± 30	V
I_D	Drain Current-Continuous, $T_c = 25^\circ C$	7	A
	Drain Current-Continuous, $T_c = 100^\circ C$	4.4	A
I_{DM}	Drain Current-Pulsed ^b	28	A
P_D	Maximum Power Dissipation @ $T_J = 25^\circ C$	43	W
EAS	Single Pulsed Avalanche Energy ^d	370	mJ
T_J, T_{STG}	Operating and Store Temperature Range	-55 to 150	$^\circ C$

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-Case Max.	2.91	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient Max.	62.5	$^\circ C/W$

Electrical Characteristics $T_J = 25^\circ C$ unless otherwise noted

Off Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	700	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 700V, V_{GS} = 0V$	-	-	1	μA
I_{GSS}	Forward Gate Body Leakage Current	$V_{DS} = 0V, V_{GS} = \pm 30V$	-	-	± 100	nA



MPF07N70

N-Channel Power MOSFET

■ 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 ^c	$V_{GS} = 10V, I_D = 3.5A$	-	1.18	1.40	Ω

■ Dynamic Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
C_{iss}	Input Capacitance	$V_{DS} = 25V,$ $V_{GS} = 0V,$ $f = 1.0MHz$	-	1249	-	pF
C_{oss}	Output Capacitance		-	112	-	pF
C_{rss}	Reverse Transfer Capacitance		-	2.67	-	pF

■ On Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$t_{d(on)}$	Turn-On Delay Time	$V_{DD} = 350V, I_D = 7A,$ $R_G = 10\Omega,$	-	16.5	-	ns
t_r	Turn-On Rise Time		-	28.6	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	44.5	-	ns
t_f	Turn-Off Fall Time		-	29.6	-	ns
Q_g	Total Gate Charge	$V_{DS} = 560V, I_D = 7A,$ $V_{GS} = 10V$	-	25.3	-	nC
Q_{gs}	Gate-Source Charge		-	5.04	-	nC
Q_{gd}	Gate-Drain Charge		-	7.96	-	nC

■ Drain-Source Diode Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
I_S	Drain-Source Diode Forward Continuous Current	$V_{GS} = 0V$	-	-	7	A
I_{SM}	Maximum Pulsed Current	$V_{GS} = 0V$	-	-	28	A
V_{SD}	Drain-Source Diode Forward Voltage	$V_{GS} = 0V, I_S = 7A$	-	-	1.5	V
t_{rr}	Reverse Recovery Time	$I_S = 7A, T_j = 25^\circ C$ $dI_F/dt = 100A/\mu s,$ $V_{GS} = 0V$	-	472	-	ns
Q_{rr}	Reverse Recovery Charge		-	2.83	-	μC

Notes:

- $T_J = +25^\circ C$ to $+150^\circ C$
- Repetitive rating; pulse width limited by maximum junction temperature.
- Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$
- $L = 10mH, V_{DD} = 50V, I_{AS} = 8.6A, R_G = 25\Omega$ Starting $T_J = 25^\circ C$

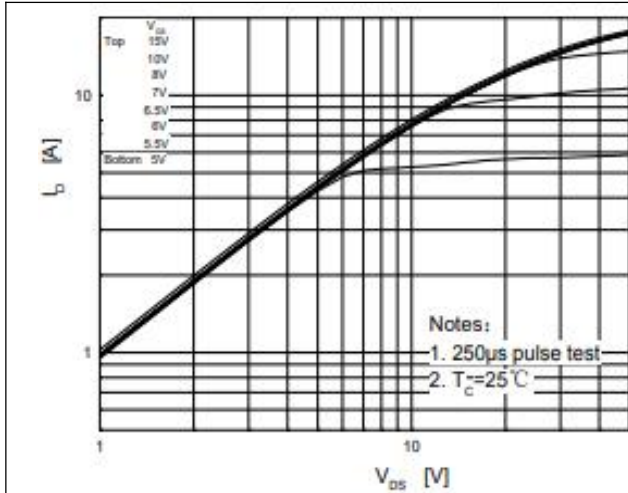


Figure 1. Typical Output Characteristics

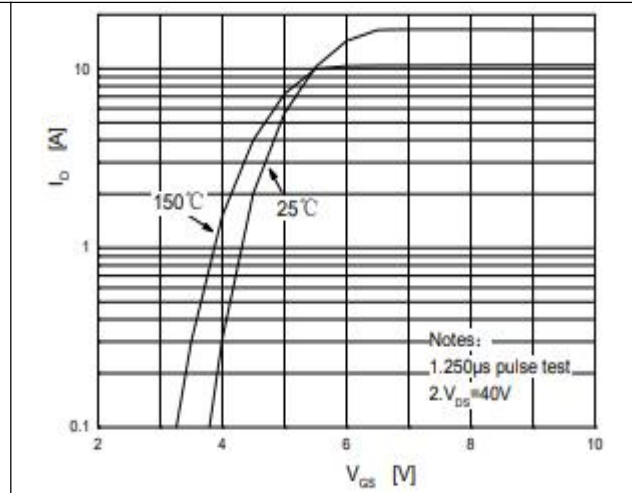


Figure 2. Typical Transfer Characteristics

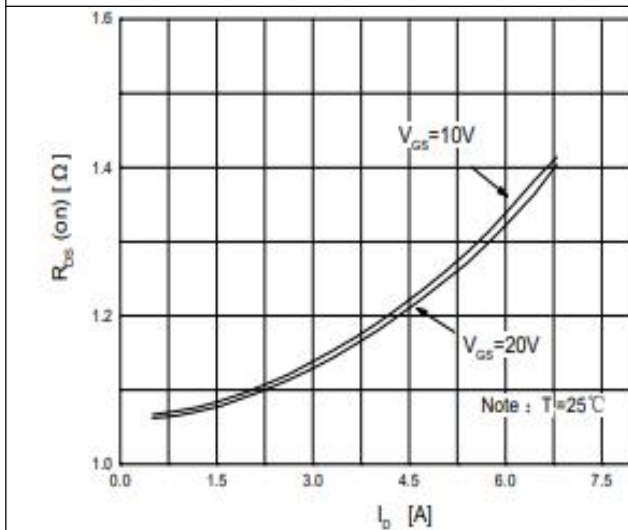


Figure 3. On-Resistance vs. Drain Current

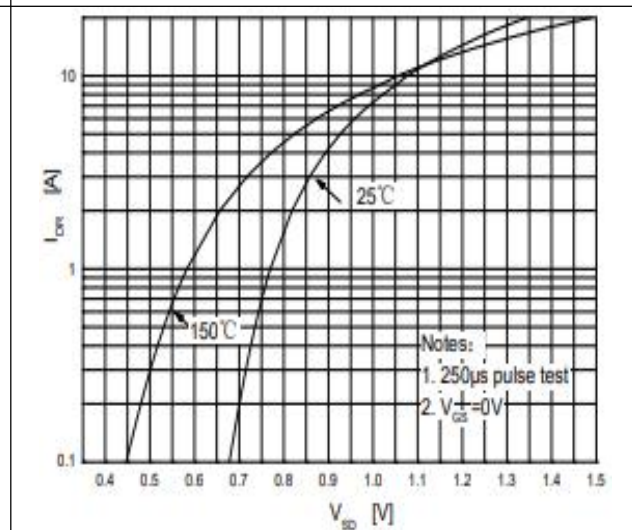


Figure 4. Body-Diode Characteristics

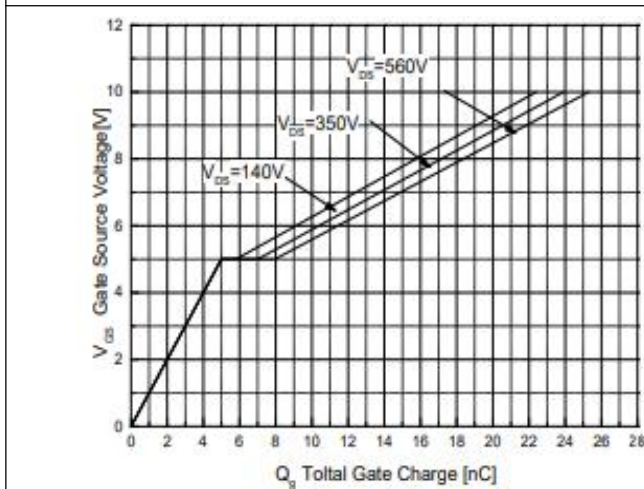


Figure 5. Gate-Charge Characteristics

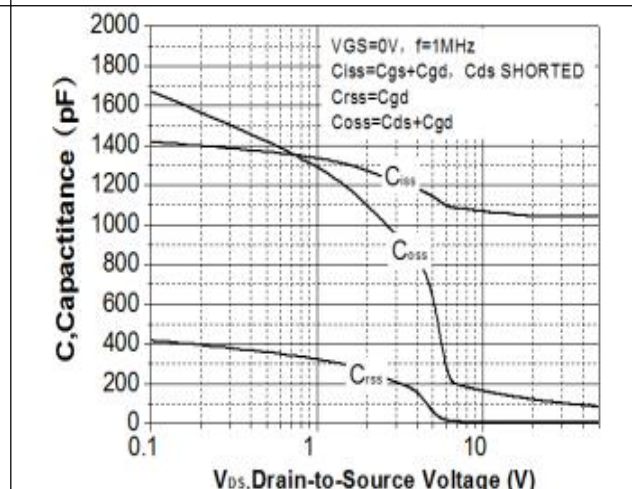


Figure 6. Capacitance Characteristics

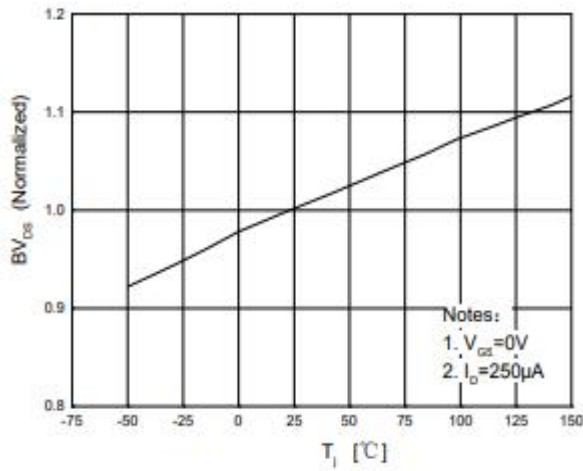


Figure 7. Normalized Breakdown voltage vs. Junction Temperature

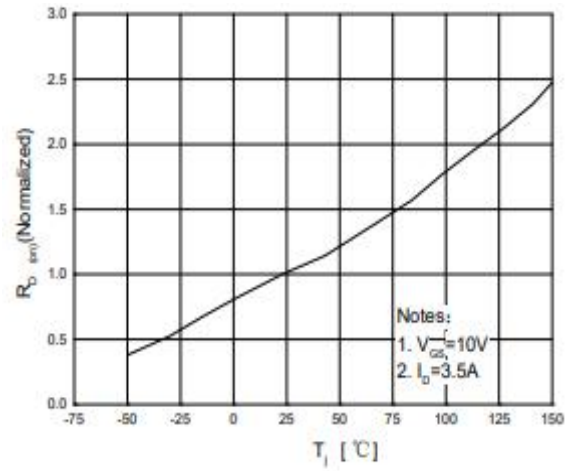


Figure 8. Normalized on Resistance vs. Junction Temperature

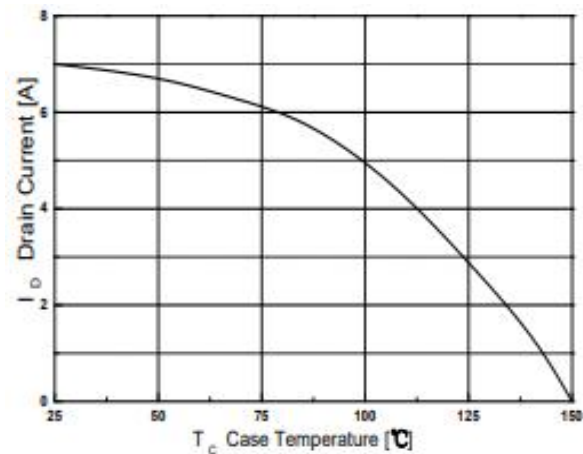


Figure 9: Maximum Continuous Drain Current vs. Case Temperature

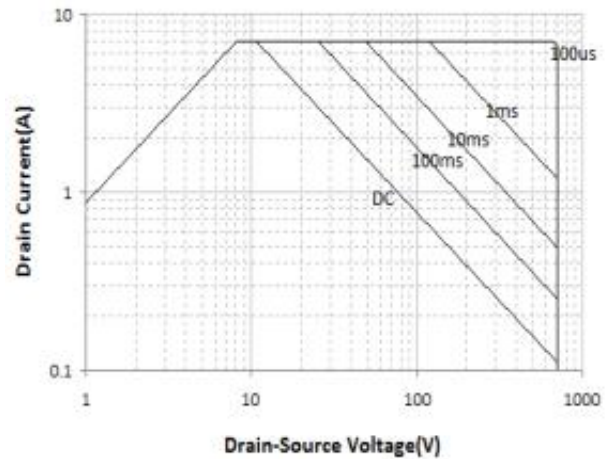


Figure 10: Maximum Safe Operating Area

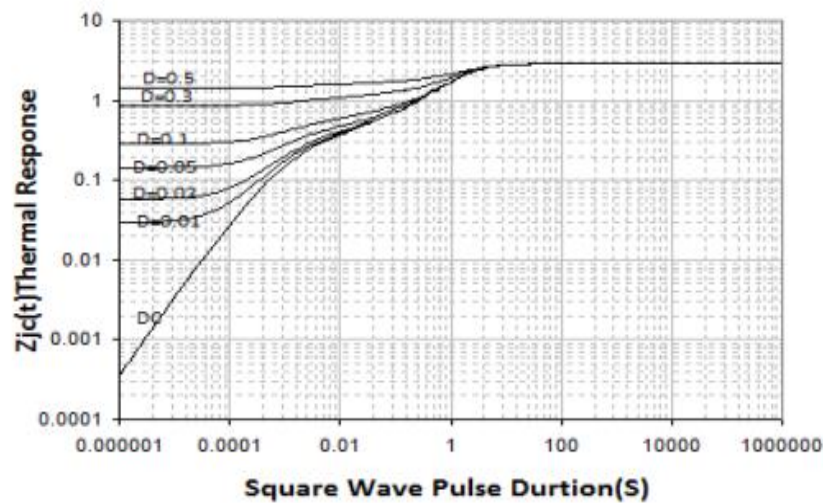


Figure 11. Normalized Maximum Transient Thermal Impedance

■ Package Information

