

68V N-Channel Mosfet

FEATURES

- $R_{DS(ON)} \leq 9m\Omega$ (7.5m Ω Typ.)
@ $V_{GS}=10V$

APPLICATIONS

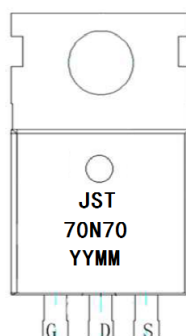
- Load Switch
- PWM Application
- Power management

TO-220C



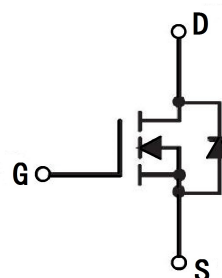
1. GATE
2. DRAIN
3. SOURCE

MARKING



YYMM:Date Code(year&month)

N-CHANNEL MOSFET



MAXIMUM RATINGS (Tc=25°C unless otherwise noted)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		68	V
V_{GSS}	Gate-Source Voltage		± 20	V
I_D	Continuous Drain Current	$T_C = 25^\circ C$	80	A
		$T_C = 100^\circ C$	52	A
I_{DM}	Pulsed Drain Current ^{note1}		320	A
E_{AS}	Single Pulsed Avalanche Energy ^{note2}		110	mJ
P_D	Power Dissipation	$T_C = 25^\circ C$	103	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		1.46	$^\circ C/W$
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +175	$^\circ C$

MOSFET ELECTRICAL CHARACTERISTICS Ta=25 °C unless otherwise specified

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V,I _D = 250μA	68	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 68V, V _{GS} = 0V, T _J = 25℃	-	-	1	μA
I _{GSS}	Gate to Body Leakage Current	V _{GS} = ±20V,V _{DS} = 0V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} ,I _D = 250μA	2	3	4	V
R _{DS(on)}	Static Drain-Source On-Resistance ^{note3}	V _{GS} =10V, I _D =30A	-	7.5	9	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =30V, V _{GS} = 0V f = 1.0MHz	-	4000	-	pF
C _{oss}	Output Capacitance		-	267	-	pF
C _{rss}	Reverse Transfer Capacitance			250	-	pF
Q _g	Total Gate Charge	V _{DS} =30V, I _D =30A V _{GS} =10V	-	35	-	nC
Q _{gs}	Gate-Source Charge		-	10	-	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	9	-	nC
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{GS} = 10V, V _{DS} =30V, R _G =3Ω, I _D =30A	-	15	-	ns
t _r	Turn-On Rise Time		-	90	-	ns
t _{d(off)}	Turn-Off Delay Time		-	45	-	ns
t _f	Turn-Off Fall Time		-	30	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	80	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	320	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _{SD} =30A, T _J = 25℃	-	-	1.2	V
t _{rr}	Reverse Recovery Time	I _F =20A,	-	78	-	ns
Q _{rr}	Reverse Recovery Charge	di/dt =100A/μs	-	51	-	nC

Notes: 1. Repetitive Rating: Pulse width limited by maximum junction temperature

2. EAS condition: $T_J = 25^\circ C, V_{DS} = 30V, V_G = 10V, R_G = 25\Omega, L = 0.5mH, I_{AS} = 21A$

3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$

TYPICAL PERFORMANCE CHARACTERISTICS

Figure1: Output Characteristics

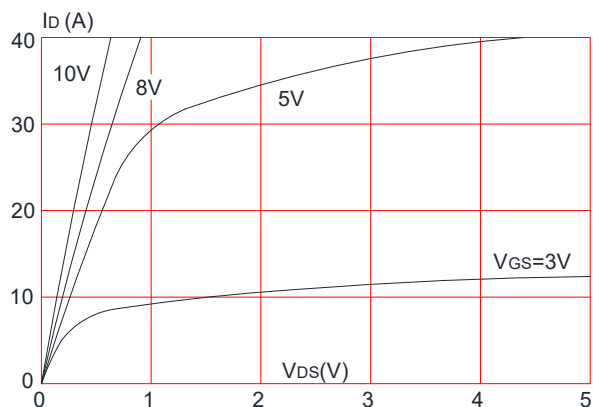


Figure 2: Typical Transfer Characteristics

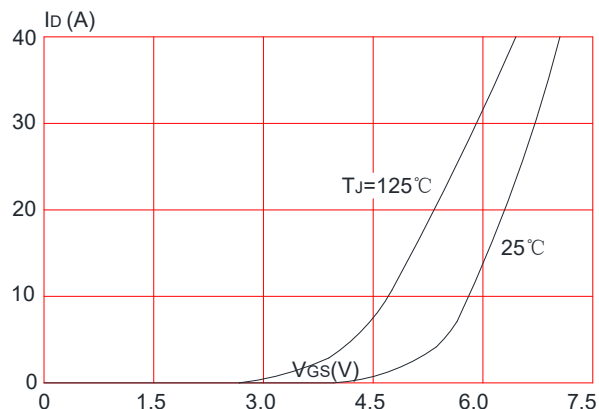


Figure 3: On-resistance vs. Drain Current

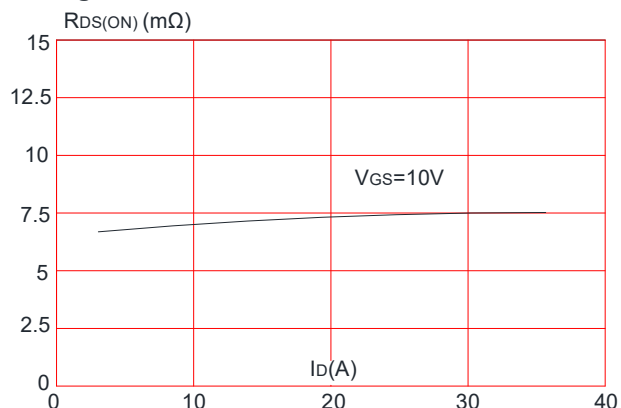


Figure 4: Body Diode Characteristics

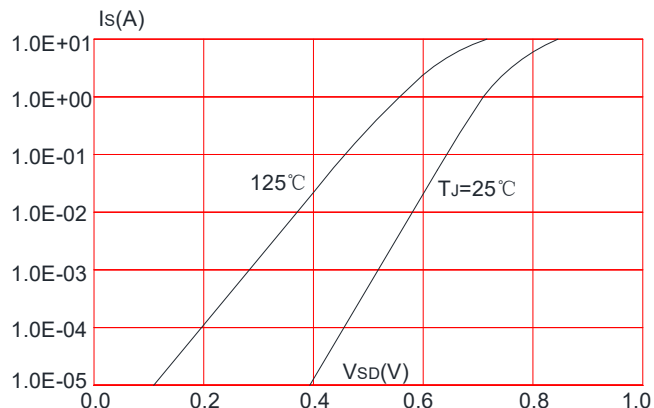


Figure 5: Gate Charge Characteristics

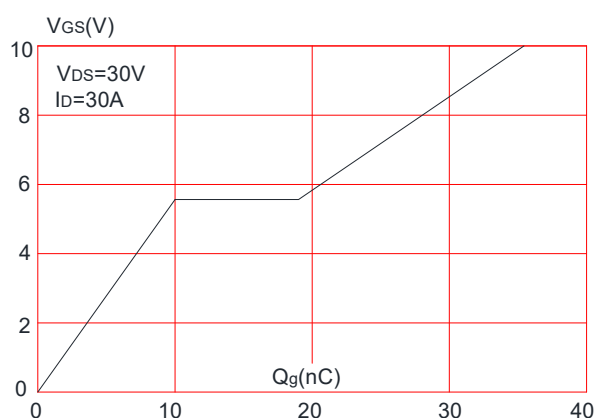


Figure 6: Capacitance Characteristics

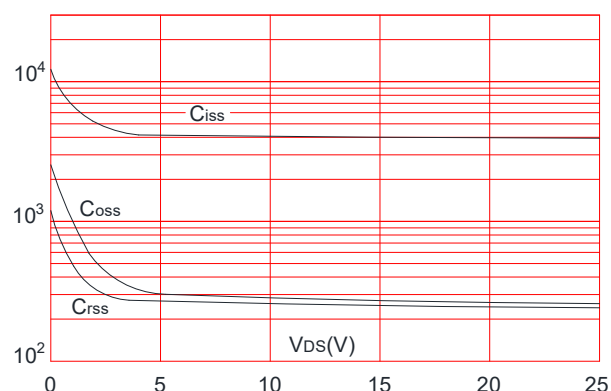


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

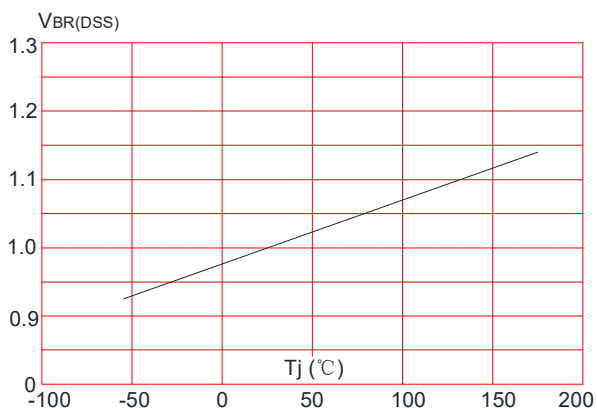


Figure 8: Normalized on Resistance vs. Junction Temperature

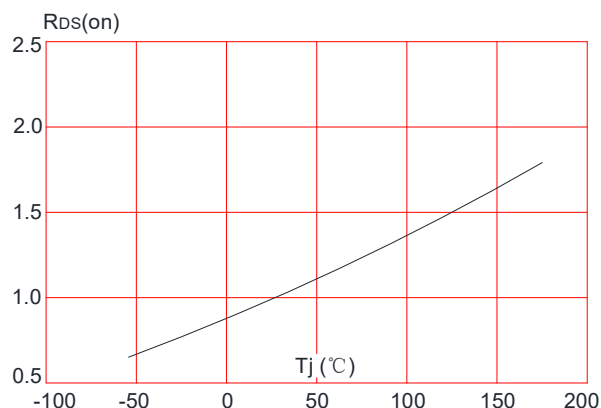


Figure 9: Maximum Safe Operating Area

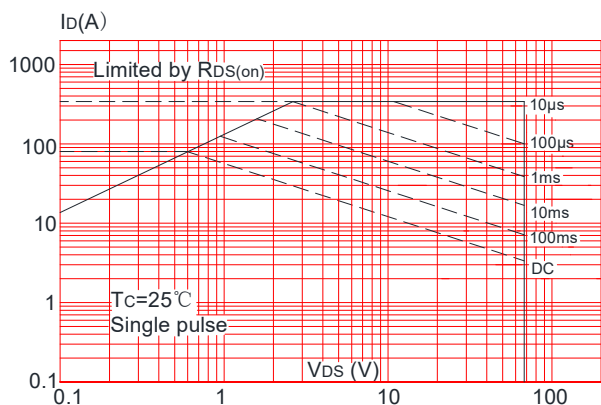


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

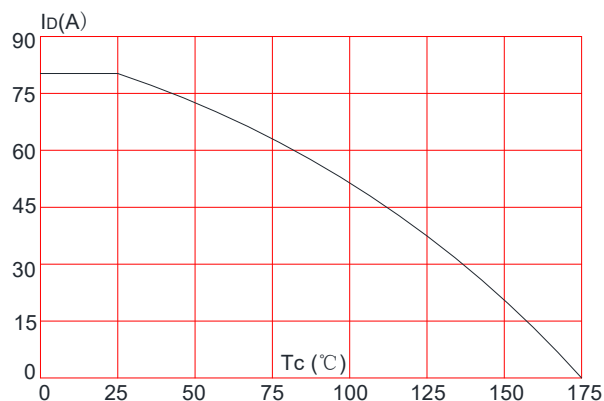
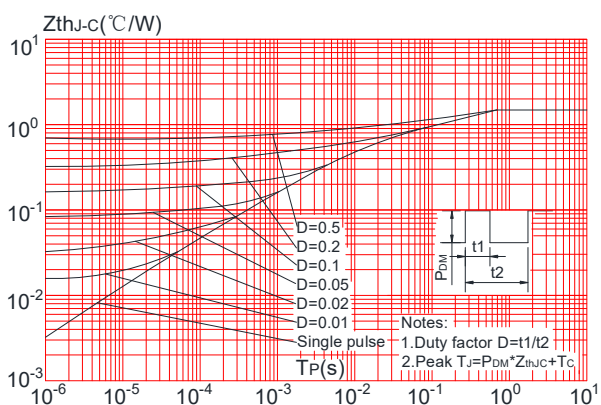
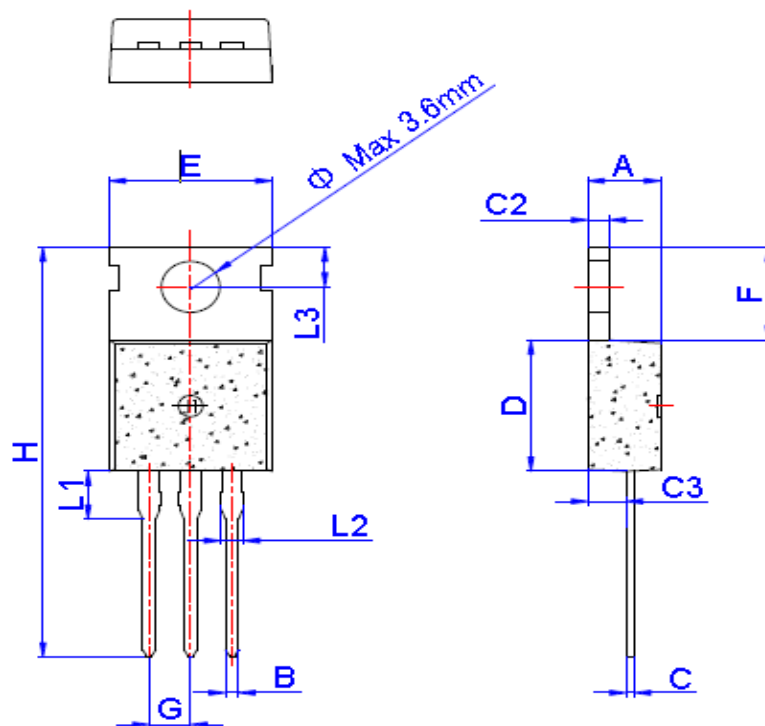


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



TO-220 PACKAGE OUTLINE DRAWING



TO-220C

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.70		0.90	0.028		0.035
C	0.45		0.60	0.018		0.024
C2	1.23		1.32	0.048		0.052
C3	2.20		2.60	0.087		0.102
D	8.90		9.90	0.350		0.390
E	9.90		10.3	0.390		0.406
F	6.30		6.90	0.248		0.272
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.39			0.133	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
Φ		3.6			0.142	