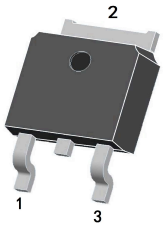
N-channel MOSFET

FEATURES

- $R_{SS(ON)}$ ≤ 28mΩ(23mΩ Typ.) @V_{GS}=10V
- $R_{SS(ON)}$ ≤ 40mΩ(30mΩ Typ.) @V_{GS}=4.5V

TO-252

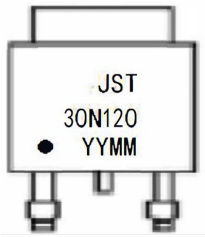


1.Gate
2.Drain
3.Source

APPLICATIONS

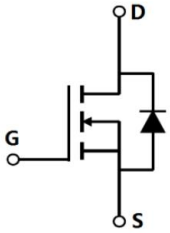
- Switch Mode Power Supply (SMPS)
- Load Switch

MARKING



YYMM:Date Code(year&month)

N-CHANNEL MOSFET



Absolute Maximum Ratings (T_C=25℃ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		120	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25℃	30	A
		T_C = 100℃	21	A
I_{DM}	Pulsed Drain Current note1		120	A
P_D	Power Dissipation	T_C = 25℃	40	W
E_{AS}	Single pulse avalanche energy note2		120	mJ
$R_{\theta JC}$	Thermal Resistance, Junction to Case		3.1	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	℃

Electrical Characteristics (T_C=25℃ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristics						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250μA	120	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =120V, V_{GS} = 0V, T_J= 25℃	-	-	1.0	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS} =0V,V_{GS} = ±20V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=250μA	1	2	3	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note3	V_{GS} =10V, I_D =15A	-	23	28	mΩ
		V_{GS} =4.5V, I_D =10A	-	30	40	mΩ
g_{FS}	Forward Transconductance	V_{GS} =5V, I_D =10A		15	-	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} =60V, V_{GS} = 0V, f = 1.0MHz	-	3000	-	pF
C_{oss}	Output Capacitance		-	140	-	pF
C_{rss}	Reverse Transfer Capacitance		-	100	-	pF
Q_g	Total Gate Charge	V_{DS} =60V, I_D =15A	-	60	-	nC
Q_{gs}	Gate-Source Charge		-	12	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	13	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=60V, V_{GS}=10V, R_{REN} =3Ω,I_D=15A	-	8	-	ns
t_r	Turn-on Rise Time		-	8	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	25	-	ns
t_f	Turn-off Fall Time		-	8	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	30	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	120	A
trr	Reverse Recovery Time	T_J=25°C, I_F= 20A di/dt = 100A/μs	-	32	-	nS
Qrr	Reverse Recovery Charge		-	48	-	nC
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S=20A	-	0.9	1.2	V

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. E_{AS} condition：Tj=25℃,V_{DD}=50V,V_G=10V,L=0.5mH, Rg=25Ω

3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

Typical Performance Characteristics

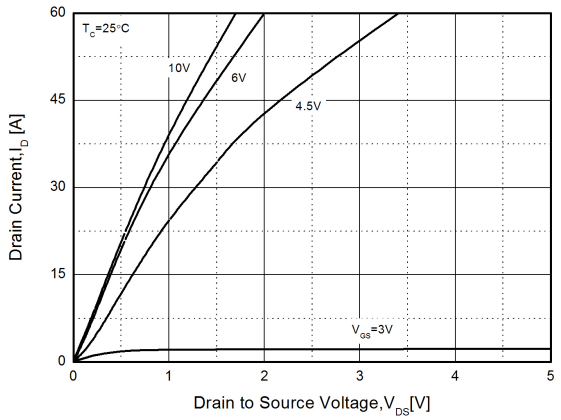


Figure1. Output Characteristics

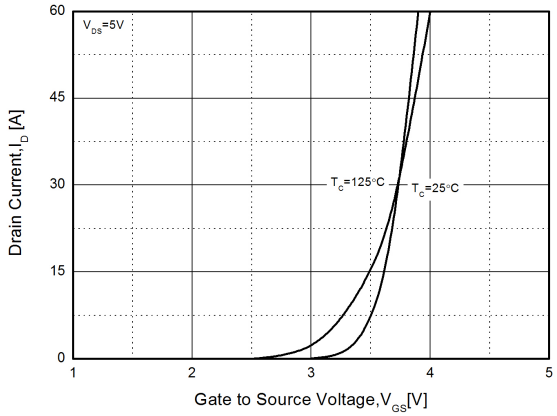


Figure2. Transfer Characteristics

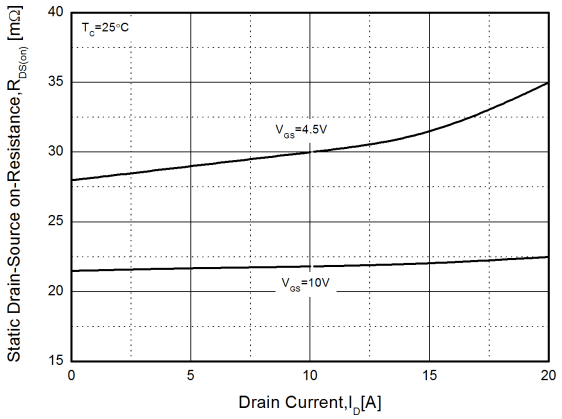


Figure3. Rdson-Drain Current

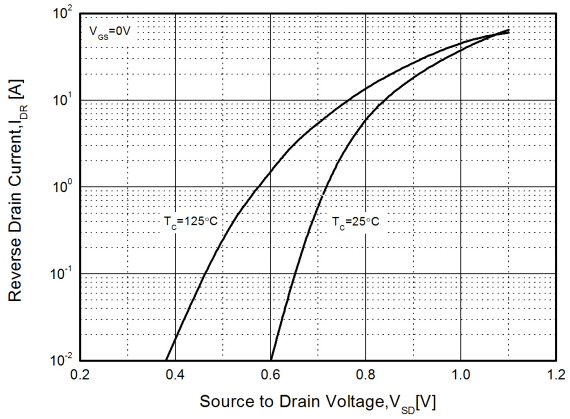


Figure4. Typical Source-Drain Diode Forward Voltage

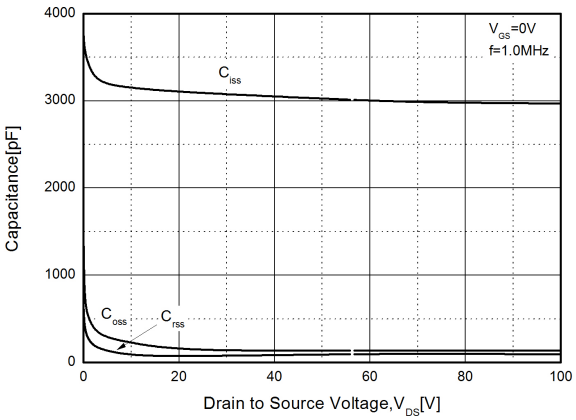


Figure5. Capacitance Characteristics

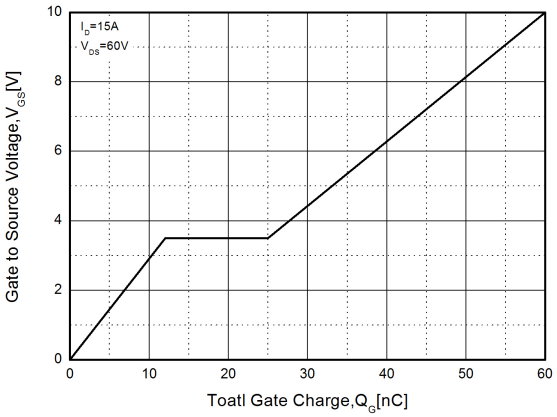


Figure6. Gate Charge

Typical Performance Characteristics (cont.)

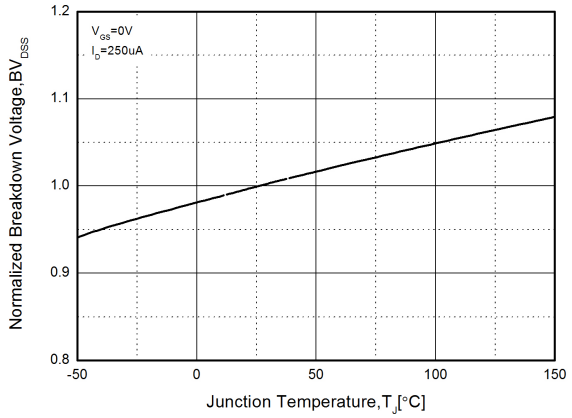


Figure7. Normalized Breakdown Voltage vs. Temperature

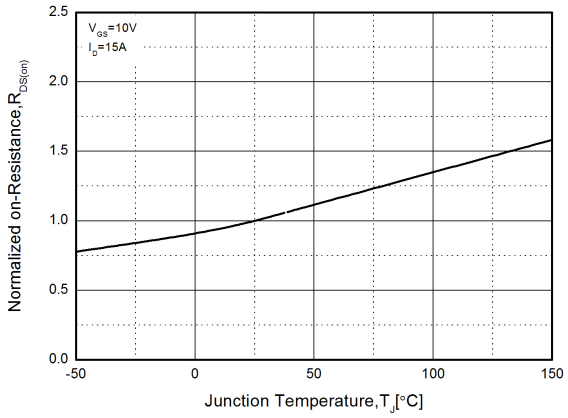


Figure8. Normalized on Resistance vs. Temperature

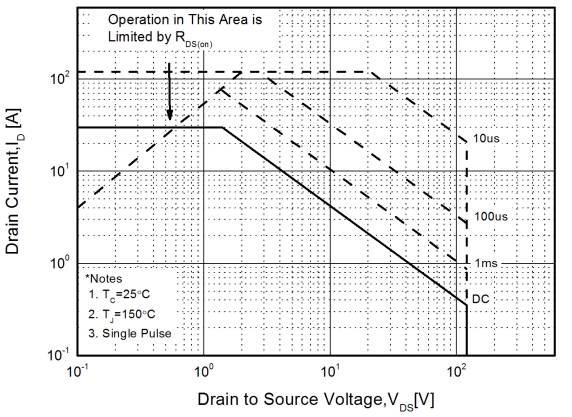


Figure9. Safe Operation Area

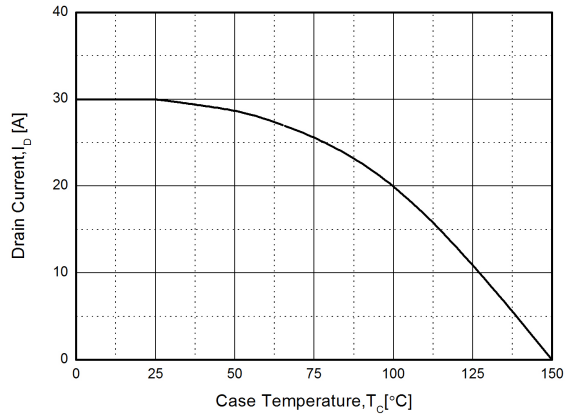


Figure10. Maximum Drain Current vs. Case Temperature

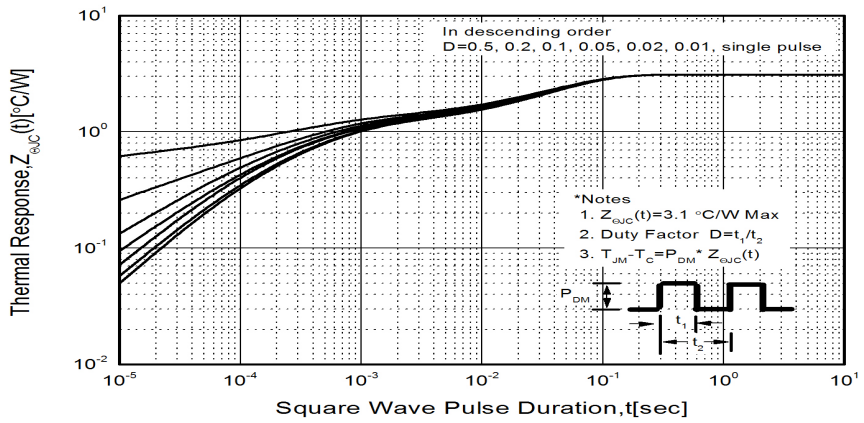
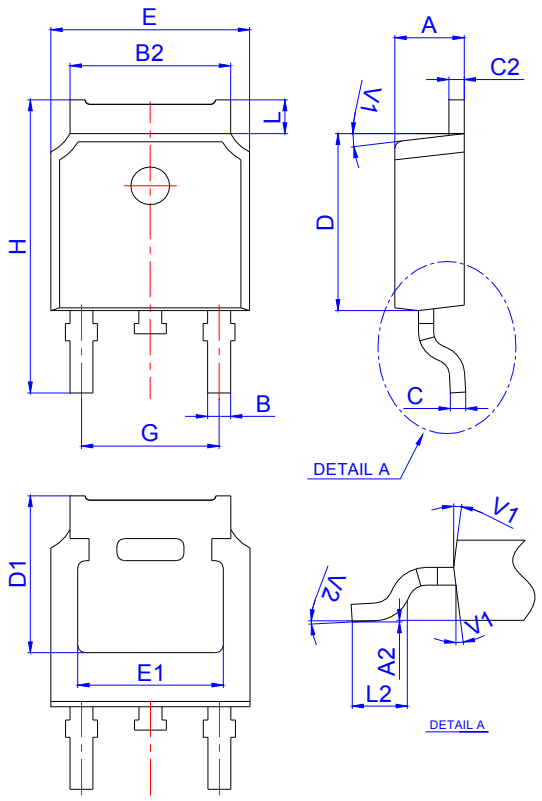


Figure11. Transient Thermal Response Curve

TO-252 Package Mechanical Data



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°