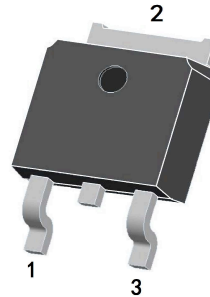


100V N-channel MOSFET

FEATURES

- $R_{DS(ON)} \leq 28m\Omega$ (23m Ω Typ.)
@ $V_{GS}=10V$
- $R_{DS(ON)} \leq 40m\Omega$ (30m Ω Typ.)
@ $V_{GS}=4.5V$
- AEC Q101 qualified
- Green Product (RoHS compliant)
- 100% UIS TEST

TO-252

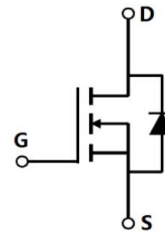


- 1.Gate
- 2.Drain
- 3.Source

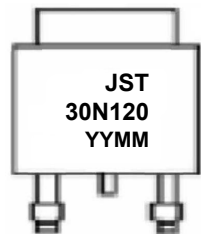
APPLICATIONS

- Automobile water pump motor
- Switch Mode Power Supply (SMPS)
- Load Switch

N-CHANNEL MOSFET



MARKING



YYMM:Date Code(year&month)

Absolute Maximum Ratings ($T_C=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		100	V
V_{GSS}	Gate-Source Voltage		± 20	V
I_D	Continuous Drain Current @ $V_{GS}=10V$	$T_C = 25^\circ\text{C}$	30	A
		$T_C = 100^\circ\text{C}$	21	A
I_{DM}	Pulsed Drain Current ^{note1}		120	A
P_D	Power Dissipation	$T_C = 25^\circ\text{C}$	48	W
E_{AS}	Single pulse avalanche energy ^{note2}		120	mJ
$R_{\theta JC}$	Thermal Resistance, Junction to Case		3.1	$^\circ\text{C/W}$
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +175	$^\circ\text{C}$

Electrical Characteristics (T_c=25°C 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	100	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =100V, 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 <small>note3</small>	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 V _{GS} = 10V	-	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
t _{rr}	Reverse Recovery Time	T _J =25℃, I _F = 20A di/dt = 100A/μs	-	32	-	nS
Q _{rr}	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: T_J=25°C, V_{DD}=50V, V_G=10V, L=0.5mH, R_g=25 Ω

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

Typical Performance Characteristics

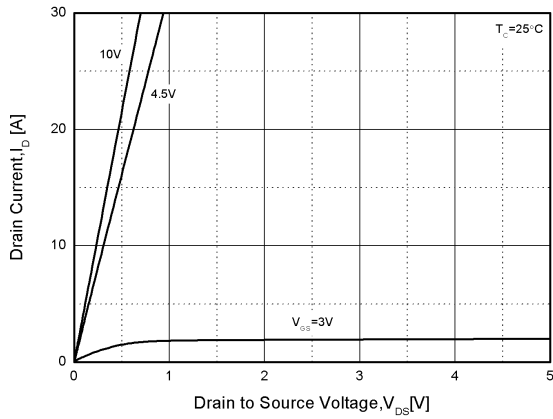


Figure1. Output Characteristics

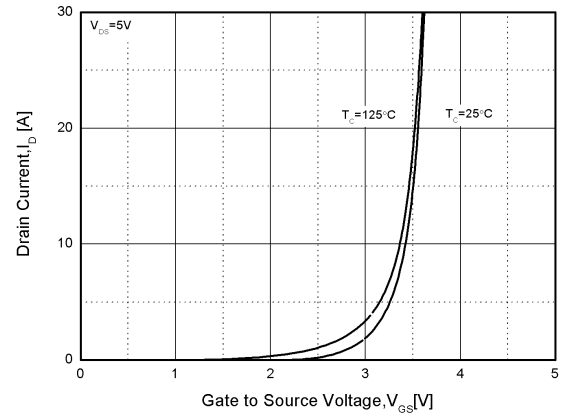


Figure2. Transfer Characteristics

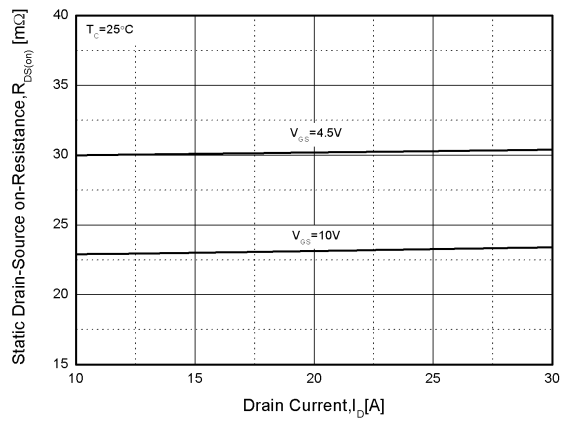


Figure3. Rdson-Drain Current

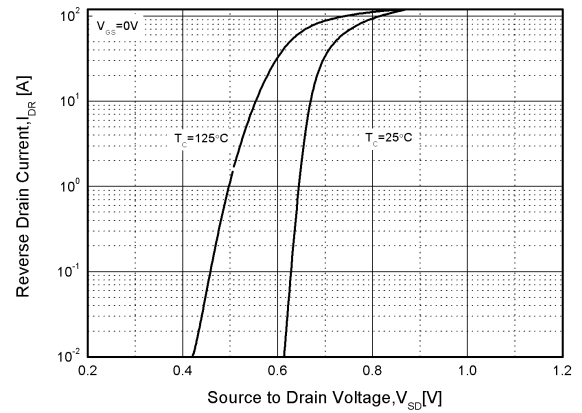


Figure4. Typical Source-Drain Diode Forward Voltage

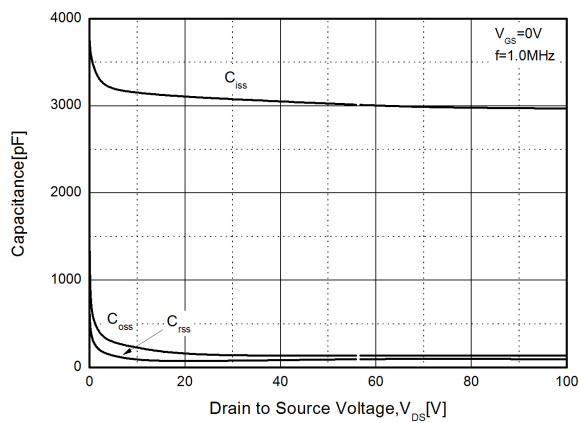


Figure5. Capacitance Characteristics

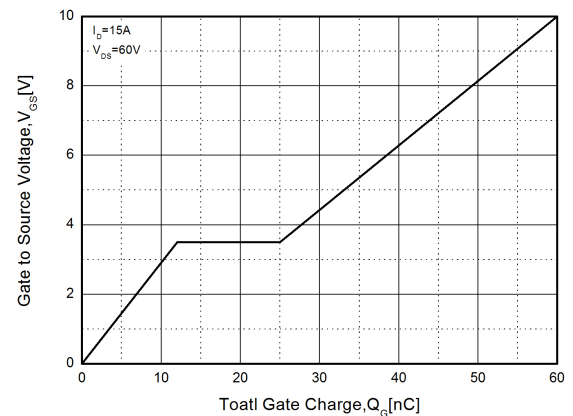


Figure6. Gate Charge

Typical Performance Characteristics (cont.)

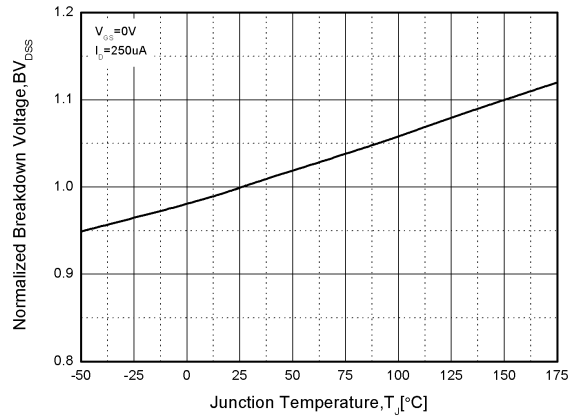


Figure7. Normalized Breakdown Voltage vs. Temperature

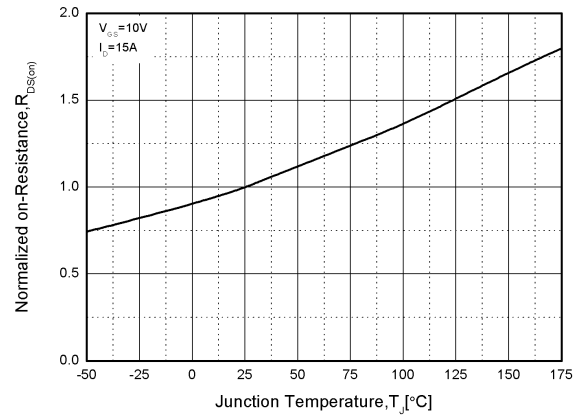


Figure8. Normalized on Resistance vs. Temperature

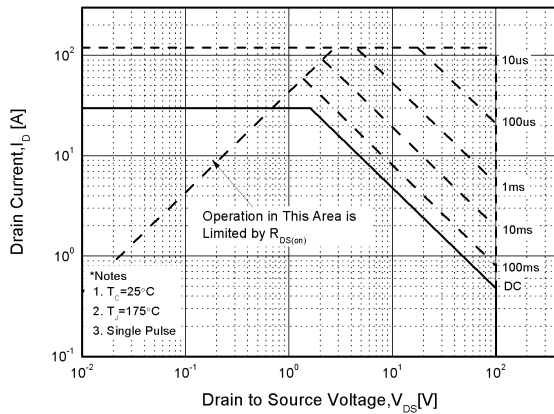


Figure9. Safe Operation Area

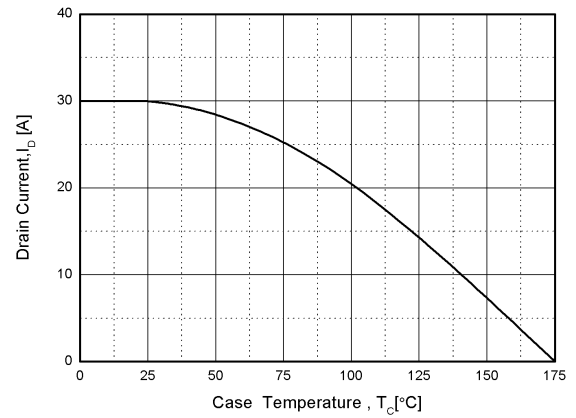


Figure10. Maximum Drain Current vs. Case Temperature

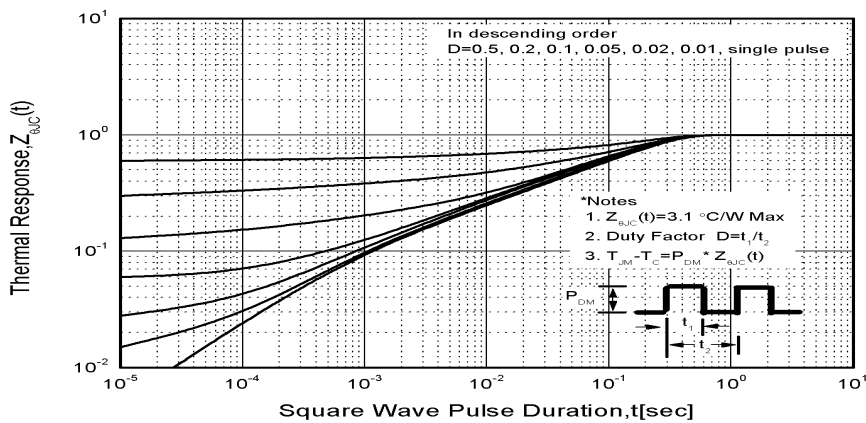
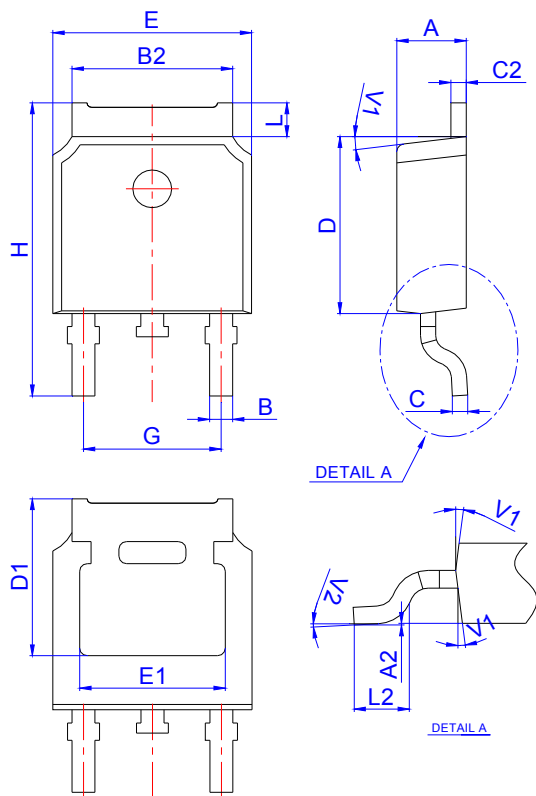


Figure11. Transient Thermal Response Curve

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°