60V N-Channel Mosfet

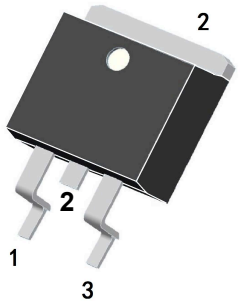
FEATURES

- $R_{DS(ON)} \leq 2.1m\Omega$ (1.4mΩ Typ) @V_{GS}=10V
- AEC Q101 qualified
- Green Product (RoHS compliant)

APPLICATIONS

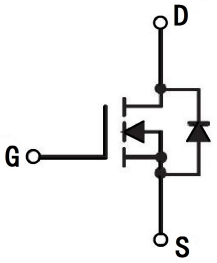
- Automotive Systems
- Load Switch
- PWM Application
- Power management

TO-263-2L

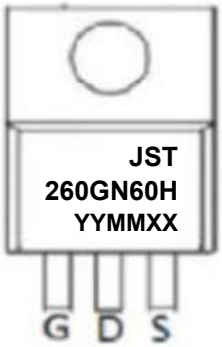


1: G
2: D
3: S

N-CHANNEL MOSFET



MARKING



YYMM:Date Code(year & month)

XX: Internal Code

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

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		60	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current @V_{GS}=10V note1	T_C = 25℃	260	A
		T_C = 100℃	180	A
I_{DM}	Pulsed Drain Current note2		1000	A
P_D	Power Dissipation		273	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		0.55	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +175	℃

Electrical Characteristics (T_C=25℃ 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	60	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=60V, V_{GS}=0V,	-	-	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	2	3	4	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note3	V_{GS}=10V, I_D=30A	-	1.4	2.1	mΩ
Dynamic Characteristics note4						
C_{iss}	Input Capacitance	V_{DS}=30V, V_{GS}=0V, f=1.0MHz	-	9800	-	pF
C_{oss}	Output Capacitance		-	1620	-	pF
C_{rss}	Reverse Transfer Capacitance		-	70	-	pF
Q_g	Total Gate Charge	V_{DS}=30V, I_D=30A, V_{GS}=10V	-	178	-	nC
Q_{gs}	Gate-Source Charge		-	34	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	25	-	nC
Switching Characteristics note4						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=30V, I_D=30A, R_L=1Ω, R_{GEN}=3Ω, V_{GS}=10V	-	25	-	ns
t_r	Turn-on Rise Time		-	21	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	65	-	ns
t_f	Turn-off Fall Time		-	17	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS}=0V, I_S=30A	-	-	1.2	V

Notes:1. T_C=25℃ Limited only by maximum temperature allowed. Calculated continuous current based on maximum allowable junction temperature.

2. PW≤10μs, Duty cycle≤1%

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

4 . Guaranteed by design, not subject to production testing

TYPICAL CHARACTERISTICS

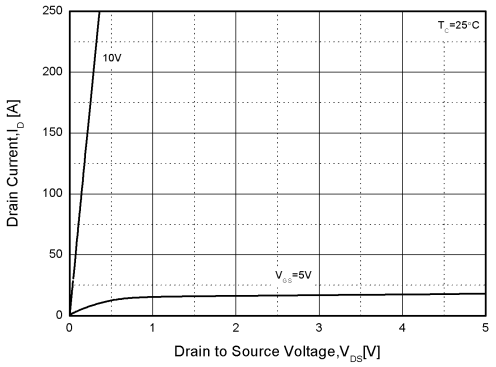


Figure1. Output Characteristics

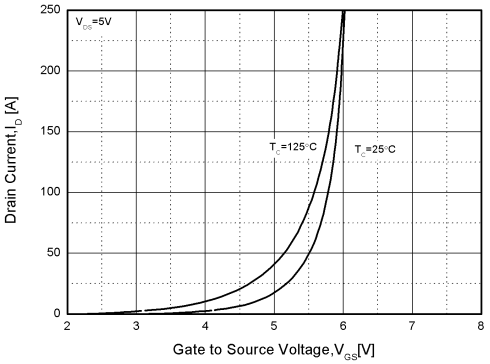


Figure2. Transfer Characteristics

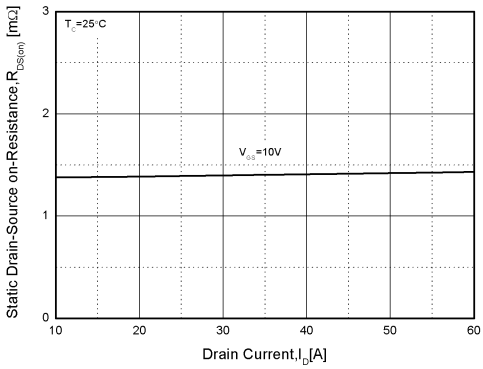


Figure3. Rdson-Drain Current

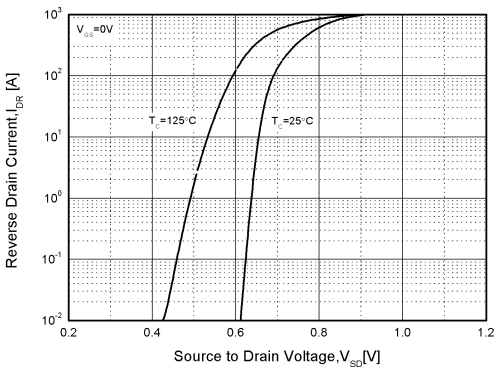


Figure4. Typical Source-Drain Diode Forward Voltage

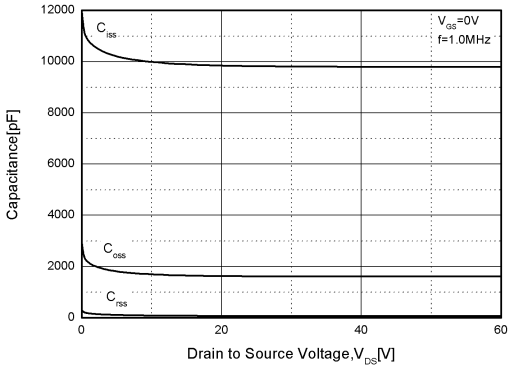


Figure5. Capacitance Characteristics

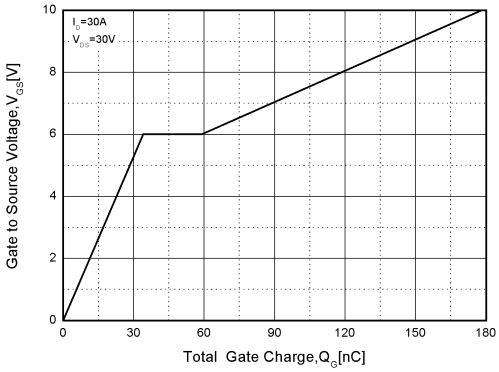


Figure6. Gate Charge

TYPICAL CHARACTERISTICS (cont.)

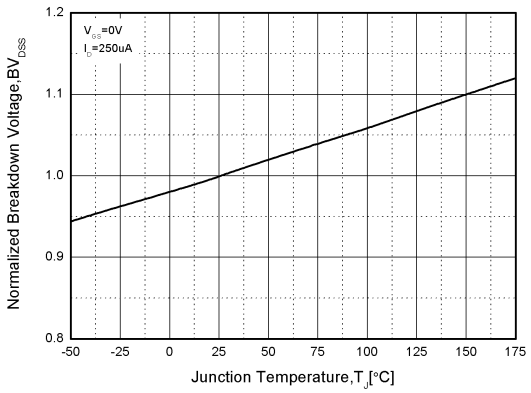


Figure7. Normalized Breakdown Voltage vs. Temperature

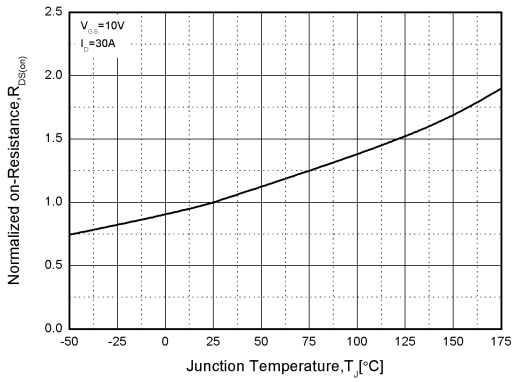


Figure8. Normalized on Resistance vs. Temperature

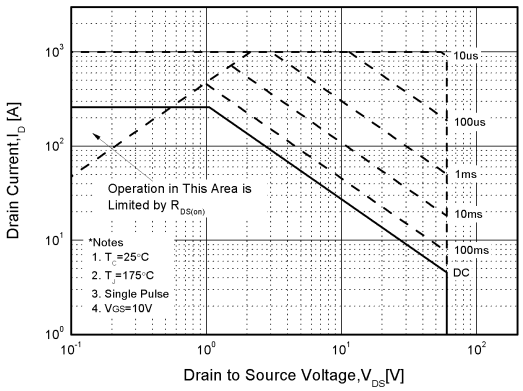


Figure9. Safe Operation Area

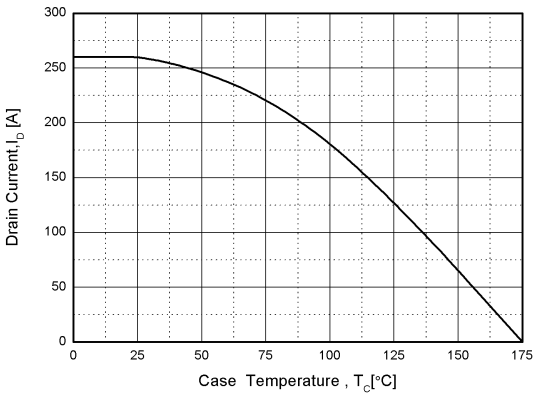


Figure10. Drain Current vs .Case Temperature

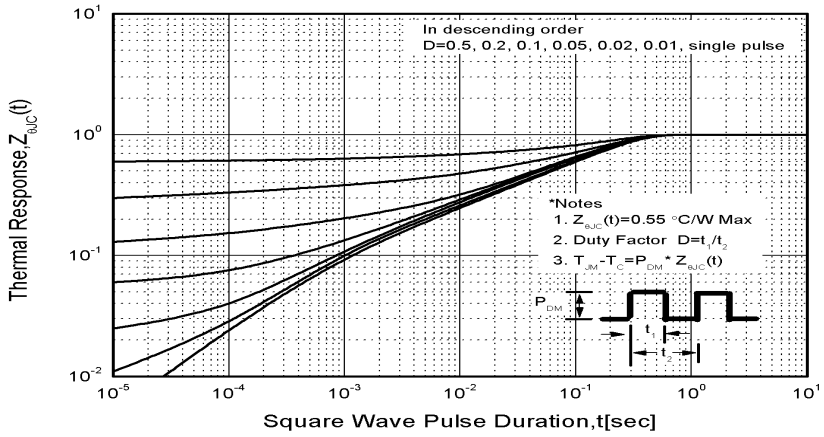
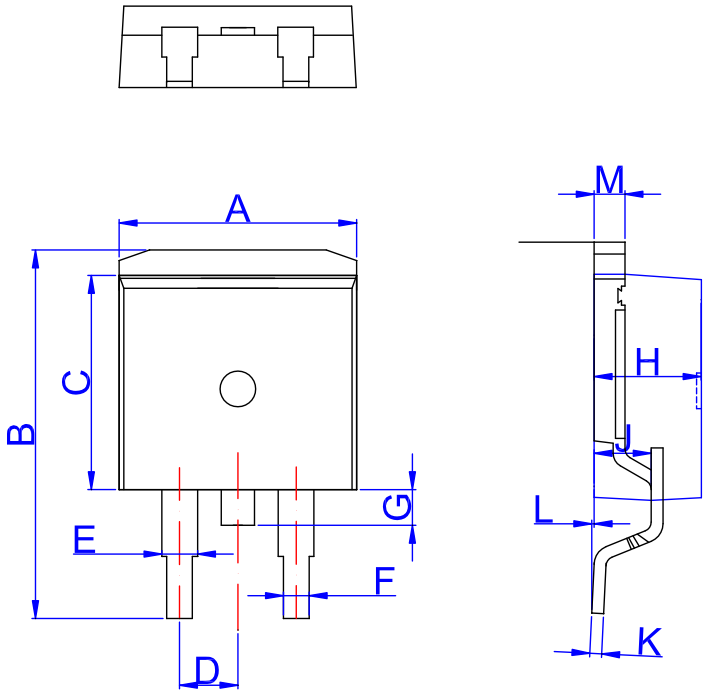


Figure11. Transient Thermal Response Curve

TO-263-2L PACKAGE OUTLINE DRAWING



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.90		10.20	0.390		0.402
B	14.70		15.80	0.579		0.622
C	9.4		9.6	0.37		0.378
D		2.54			0.100	
E	1.20		1.40	0.047		0.055
F	0.75		0.85	0.029		0.033
G			1.75			0.069
H	4.40		4.70	0.173		0.185
J	2.30		2.70	0.091		0.106
K	0.38		0.55	0.015		0.022
L	0	0.10	0.25	0	0.004	0.010
M	1.25		1.35	0.049		0.053