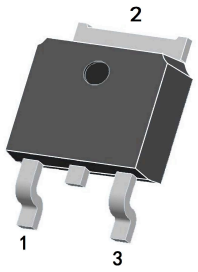
JST50GN80T2-Q

85V N-channel MOSFET

FEATURES

- $R_{DS(ON)}$ ≤ 13.5mΩ (10.5mΩ Typ.) @V_{GS}=10V
- $R_{DS(ON)}$ ≤ 17mΩ (13mΩ Typ.) @V_{GS}=4.5V
- AEC Q101 qualified
- Green Product (RoHS compliant)
- 100% UIS TEST

TO-252

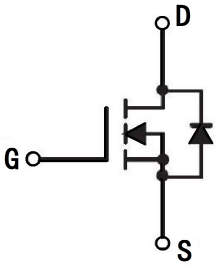


1. GATE
2. DRAIN
3. SOURCE

APPLICATION

- Automotive Lighting
- Synchronous rectification
- Power Management
- PWM Applications

N-CHANNEL MOSFET



MARKING

YYMM:Date Code(year & month)

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

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		85	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current @V_{GS}=10V	T_C = 25℃	50	A
		T_C = 100℃	35	A
I_{DM}	Pulsed Drain Current note1		200	A
E_{AS}	Single Pulsed Avalanche Energy note2		169	mJ
P_D	Power Dissipation	T_C = 25℃	60	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		2.5	℃/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	85	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =85V, 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	1.0	1.5	2.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note3	V_{GS} =10V, I_D =25A	-	10.5	13.5	mΩ
		V_{GS} =4.5V, I_D =12.5A	-	13	17	
Dynamic Characteristics note4						
C_{iss}	Input Capacitance	V_{DS} = 40V, V_{GS} =0V, f = 1.0MHz	-	1550	-	pF
C_{oss}	Output Capacitance		-	262	-	pF
C_{rss}	Reverse Transfer Capacitance		-	15	-	pF
Q_g	Total Gate Charge	V_{DS} =40V, I_D =25A, V_{GS} =10V	-	36	-	nC
Q_{gs}	Gate-Source Charge		-	9.0	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge			4.7	-	nC
Switching Characteristics note4						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=40V, I_D =25A, R_{GEN}=3Ω, V_{GS} =10V	-	9.5	-	ns
t_r	Turn-on Rise Time		-	6.9	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	29	-	ns
t_f	Turn-off Fall Time		-	14.8	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} =0V, I_S=25A	-	-	1.3	V

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

2. EAS condition T_J=25℃,VDD=20V,VG=10V,L=0.5mH

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

4. Guaranteed by design, not subject to production testing

TYPICAL PERFORMANCE CHARACTERISTICS

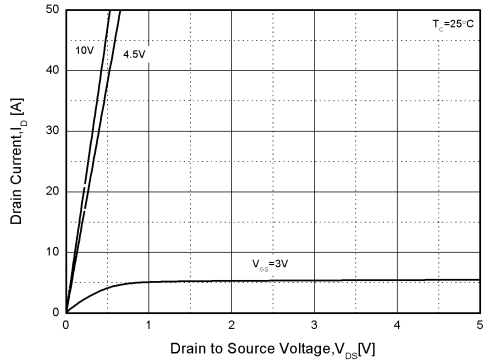


Figure1. Output Characteristics

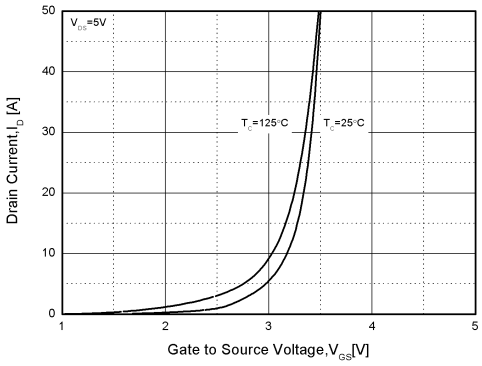


Figure2. Transfer Characteristics

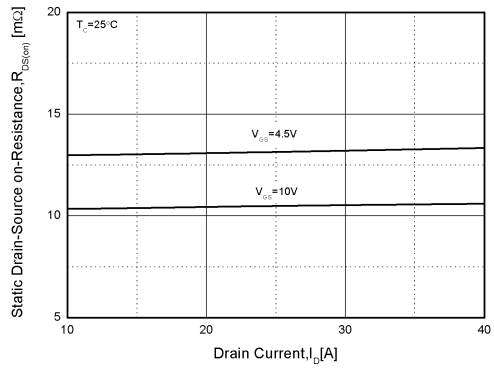


Figure3. Rdson-Drain Current

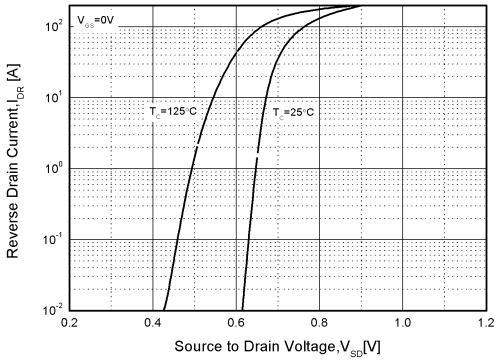


Figure4. Typical Source-Drain Diode Forward Voltage

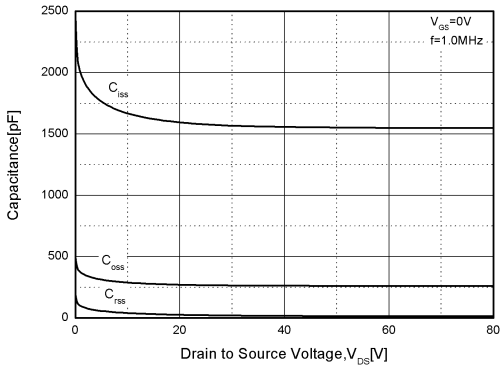


Figure5. Capacitance Characteristics

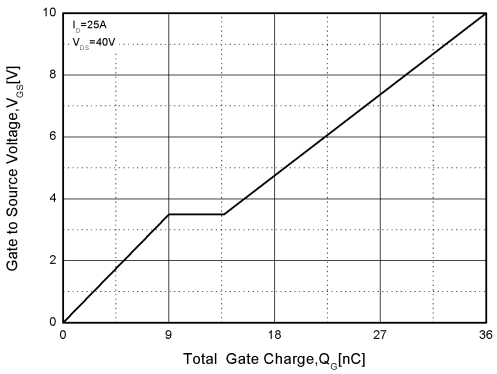


Figure6. Gate Charge

TYPICAL PERFORMANCE CHARACTERISTICS (cont.)

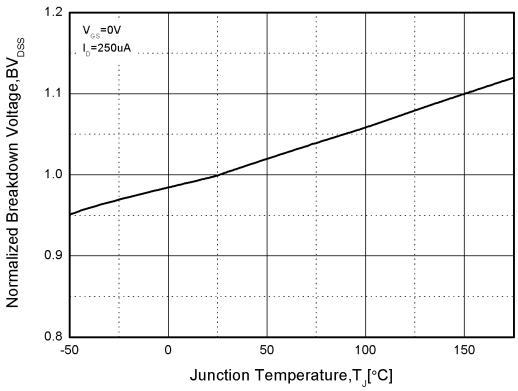


Figure7. Normalized Breakdown Voltage vs. Temperature

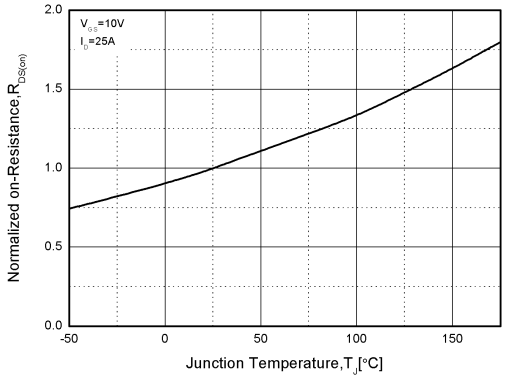


Figure8. Normalized on Resistance vs. Temperature

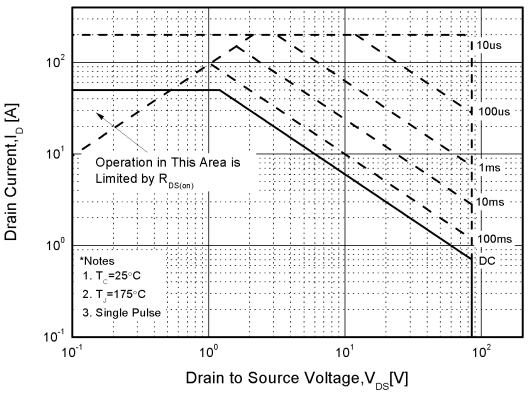


Figure9. Safe Operation Area

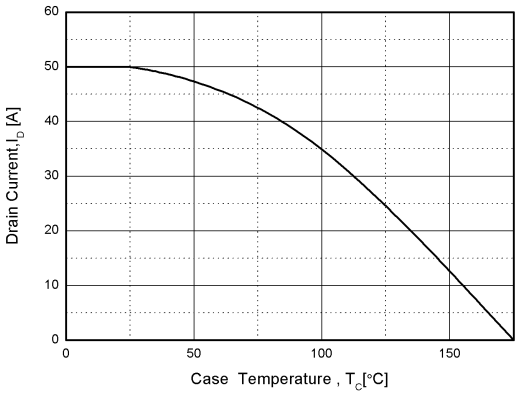


Figure10. Drain Current vs. Case Temperature

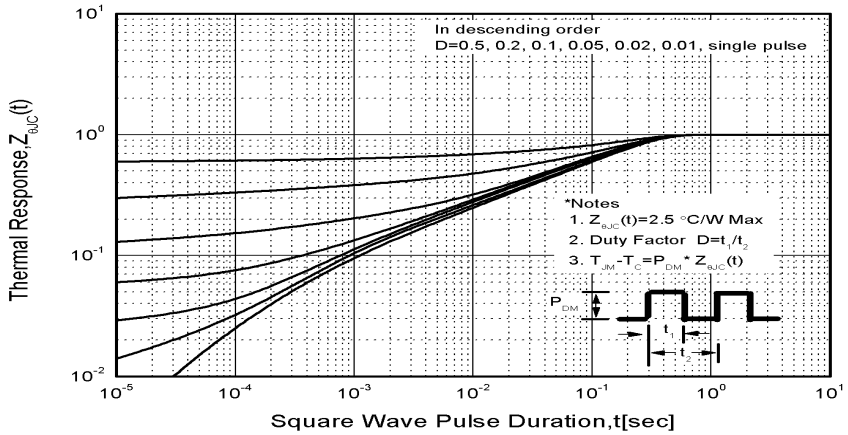
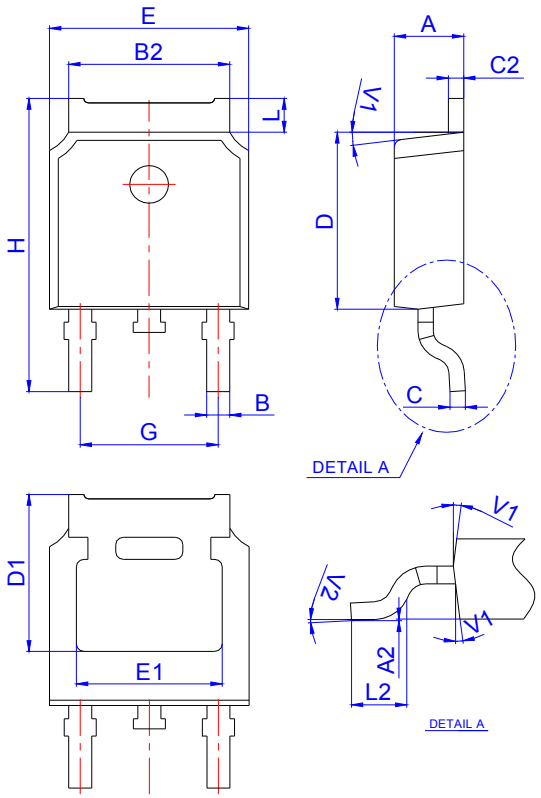


Figure11. Transient Thermal Response Curve

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°