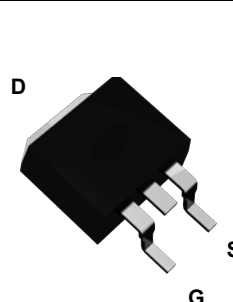
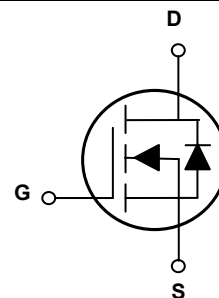


Main Product Characteristics

$V_{(BR)DSS}$	900V
$R_{DS(ON)}$	2.3Ω (Max.)
I_D	6A



TO-263 (D²PAK)



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Ideal for high efficiency switched mode power supplies
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery



Description

The GSJT6N90 utilizes the latest techniques to achieve high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in high efficiency switch mode power supplies and a wide variety of other applications.

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

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	900	V
Gate-Source Voltage	V_{GS}	±30	V
Drain Current-Continuous @ Steady-State ($T_C=25^{\circ}\text{C}$)	I_D	6	A
Drain Current-Continuous @ Steady-State ($T_C=100^{\circ}\text{C}$)		3.9	
Drain Current-Pulsed	I_{DM}	24	A
Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	90	W
		0.72	W/ $^{\circ}\text{C}$
Single Pulsed Avalanche Energy ¹	E_{AS}	437	mJ
Junction-to-Ambient, (PCB Mounted, Steady-State)	$R_{\theta JA}$	62	$^{\circ}\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.39	$^{\circ}\text{C}/\text{W}$
Junction Temperature Range	T_J	-55 To +150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 To +150	$^{\circ}\text{C}$

Electrical Characteristics ($T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	900	-	-	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=900V, V_{GS}=0V$	-	-	1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 30V, V_{DS}=0V$	-	-	± 100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=3A$	-	1.9	2.3	Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	2	-	4	V
Dynamic and Switching Characteristics						
Total Gate Charge ^{2,3}	Q_g	$V_{DD}=720V, I_D=6A, V_{GS}=10V$	-	26	-	nC
Gate-to-Source Charge ^{2,3}	Q_{gs}		-	8.1	-	
Gate-to-Drain ("Miller") Charge ^{2,3}	Q_{gd}		-	10	-	
Turn-On Delay Time ^{2,3}	$t_{d(on)}$	$V_{DD}=450V, R_G=25\Omega, V_{GS}=10V, I_D=6A$	-	18	-	nS
Rise Time ^{2,3}	t_r		-	31	-	
Turn-Off Delay Time ^{2,3}	$t_{d(off)}$		-	65	-	
Fall Time ^{2,3}	t_f		-	35	-	
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, F=1MHz$	-	1095	-	pF
Output Capacitance	C_{oss}		-	96	-	
Reverse Transfer Capacitance	C_{rss}		-	5.5	-	
Gate Resistance	R_g	$F=1MHz$	-	4.3	-	Ω
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current (Body Diode)	I_S	$T_C=25^\circ\text{C}$, MOSFET symbol showing the integral reverse p-n junction diode.	-	-	6	A
Source Pulse Current	I_{SM}		-	-	24	A
Reverse Recovery Time	T_{rr}	$V_{GS}=0V, I_F=6A, di_F/dt=100A/\mu s$	-	565	-	nS
Reverse Recovery Charge	Q_{rr}		-	3.8	-	μC
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=6A$	-	-	1.4	V

Notes:

1. $L=30mH, I_{AS}=5.2A, V_{DD}=100V, R_G=25\Omega$, starting temperature $T_J=25^\circ\text{C}$.
2. Pulse test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

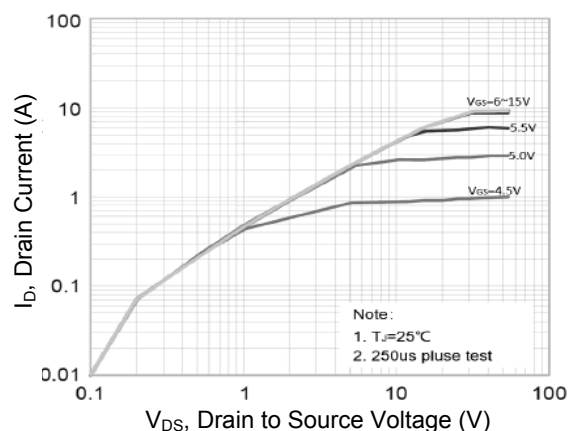


Figure 1. Typical Output Characteristics

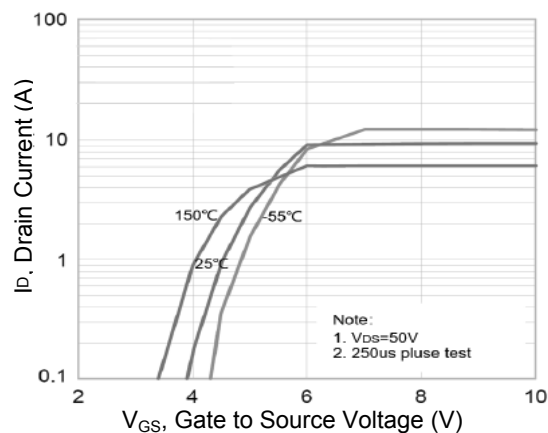


Figure 2. Transfer Characteristics

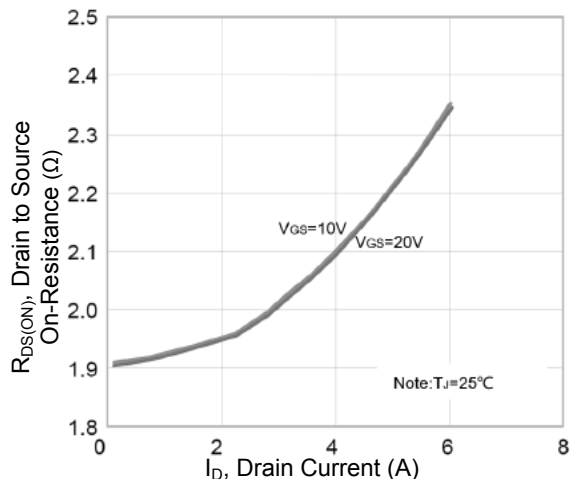


Figure 3. $R_{DS(on)}$ vs. Drain Current

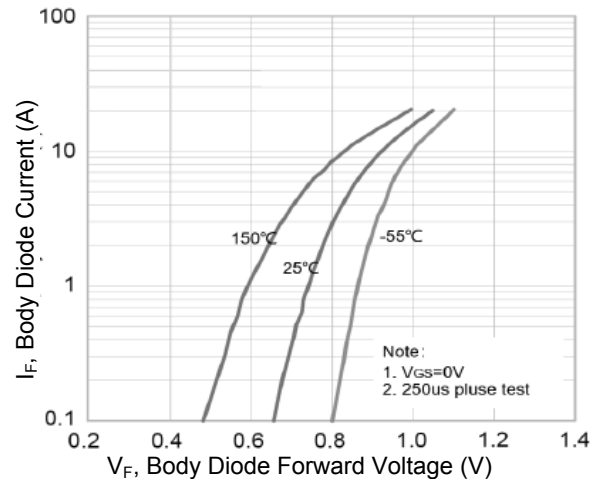


Figure 4. Body Diode Characteristics

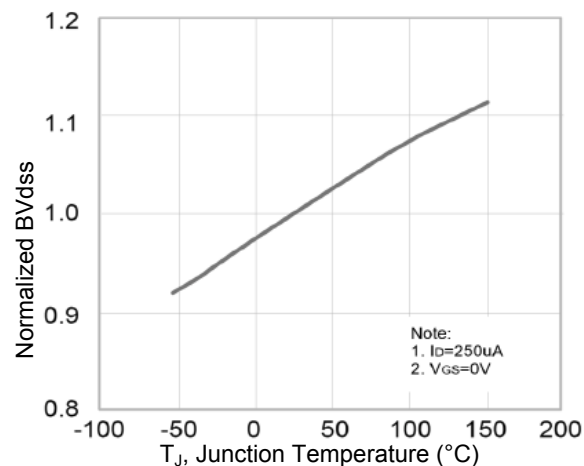


Figure 5. Normalized BV_{dss} vs. T_J

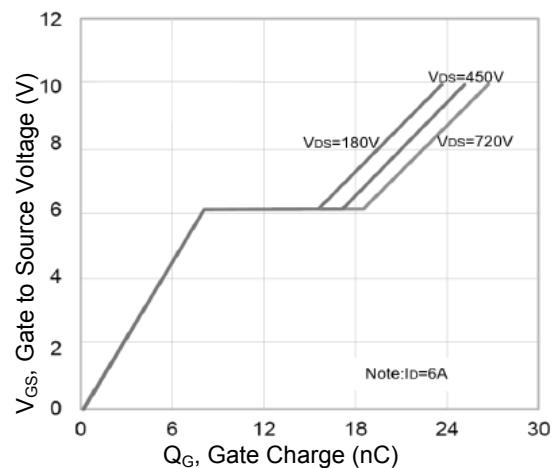


Figure 6. Gate Charge

Typical Electrical and Thermal Characteristic Curves

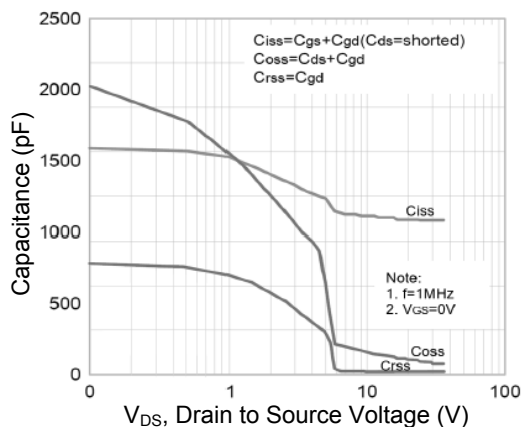


Figure 7. Capacitance Characteristic

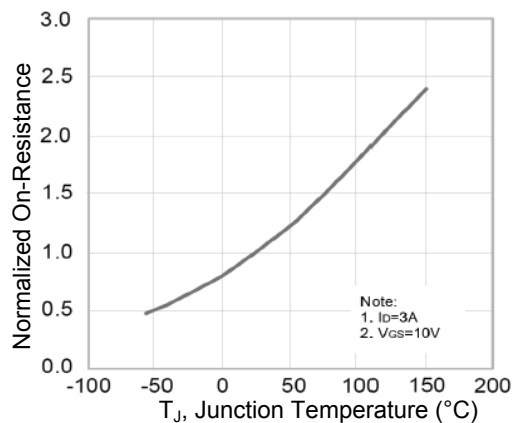


Figure 8. Normalized $R_{DS(ON)}$ vs. T_J

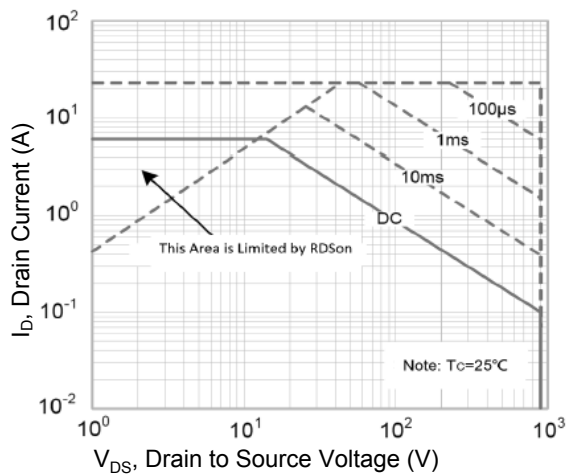
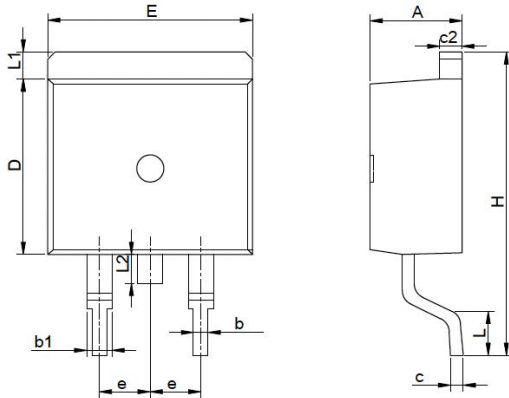


Figure 9. Safe Operation Area

Package Outline Dimensions (TO-263)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.300	4.900	0.169	0.193
b	0.700	0.950	0.028	0.037
b1	1.070	1.500	0.042	0.059
c	0.280	0.600	0.011	0.024
c2	1.170	1.370	0.046	0.054
D	8.400	9.350	0.331	0.368
E	9.800	10.450	0.386	0.411
e	2.540 BSC		0.100 BSC	
H	14.700	16.300	0.579	0.642
L	2.000	3.800	0.079	0.150
L1	0.970	1.420	0.038	0.056
L2	-	1.750	-	0.069

Order Information

Device	Package	Marking	Carrier	Quantity
GSJT6N90	TO-263	T6N90	Tape & Reel	800 Pcs / Reel