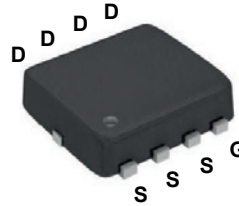
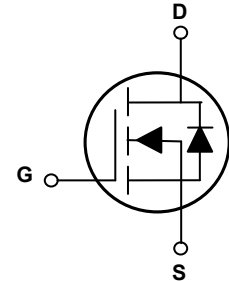


Main Product Characteristics

$V_{(BR)DSS}$	30V
$R_{DS(ON)}$	3.5m Ω (Typ.)
I_D	70A



PPAK3x3



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
- AEC-Q101 qualified

Description

The GSGN4R303AU 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°C unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-to-Source Voltage	V_{GS}	±20	V
Continuous Drain Current, @ Steady-State (T _C =25°C) ¹	I_D	70	A
Continuous Drain Current, @ Steady-State (T _C =100°C)		44	A
Pulsed Drain Current ²	I_{DM}	280	A
Power Dissipation (T _C =25°C)	P_D	35	W
Linear Derating Factor (T _C =25°C)		0.24	W/°C
Single Pulse Avalanche Energy ³	E_{AS}	36	mJ
Junction-to-Case	$R_{\theta JC}$	4.28	°C/W
Junction-to-Ambient (PCB Mounted, Steady-State) ⁴	$R_{\theta JA}$	59.0	°C/W
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +175	°C

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V, T_J=25^{\circ}\text{C}$	-	-	1	μA
		$T_J=125^{\circ}\text{C}$	-	0.5	-	
Gate-to-Source Forward Leakage	I_{GSS}	$V_{GS}=20V$	-	-	100	nA
		$V_{GS}=-20V$	-	-	-100	
Static Drain-to-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=25A$	-	3.5	4.3	m Ω
		$V_{GS}=4.5V, I_D=10A$	-	5.3	6.8	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.1	-	2.8	V
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=15V, f=1\text{MHz}$	-	1073	-	pF
Output Capacitance	C_{oss}		-	651	-	
Reverse Transfer Capacitance	C_{rss}		-	57	-	
Total Gate Charge	Q_g	$I_D=25A, V_{DD}=15V, V_{GS}=4.5V$	-	9.6	-	nC
Gate-to-Source Charge	Q_{gs}		-	4.6	-	
Gate-to-Drain ("Miller") Charge	Q_{gd}		-	3.0	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{GS}=4.5V, V_{DD}=20V, I_D=25A, R_{GEN}=5\Omega$	-	10	-	nS
Rise Time	t_r		-	44	-	
Turn-Off Delay Time	$t_{d(off)}$		-	15	-	
Fall Time	t_f		-	13	-	
Gate Resistance	R_g	$f=1\text{MHz}$	-	1.1	-	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	70	A
Pulsed Source Current (Body Diode)	I_{SM}		-	-	280	A
Diode Forward Voltage	V_{SD}	$I_S=10A, V_{GS}=0V$	-	-	1.4	V
Reverse Recovery Time	T_{rr}	$I_S=25A, V_{GS}=0V, V_R=30V$ $di/dt=100A/\mu s$	-	28	-	nS
Reverse Recovery Charge	Q_{rr}		-	18	-	nC

Notes:

1. Pulse test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. $L=0.5\text{mH}$, $R_G=10\Omega$, $V_{DD}=50V$, $T_J=25^{\circ}\text{C}$.
4. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Electrical and Thermal Characteristic Curves

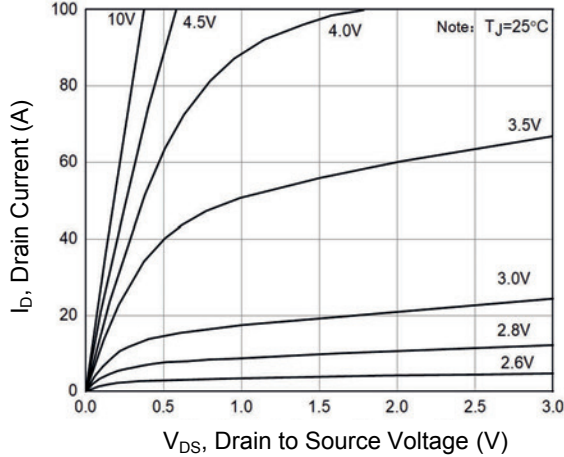


Figure 1. Output Characteristics

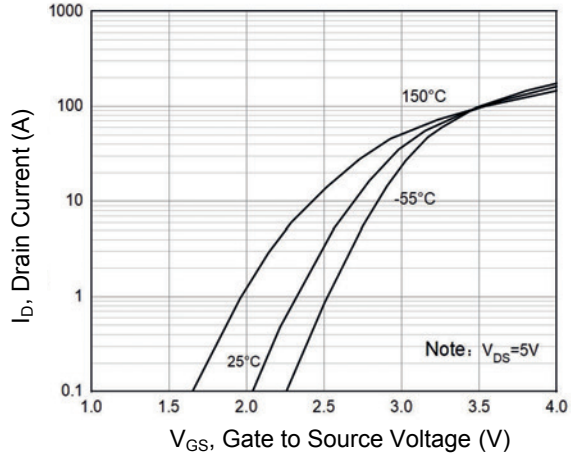


Figure 2. Transfer Characteristics

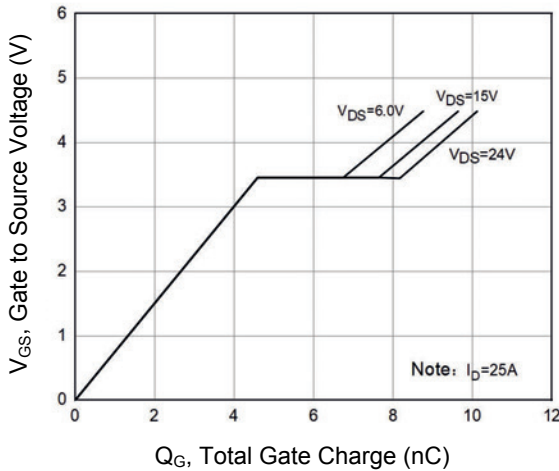


Figure 3. Gate Charge

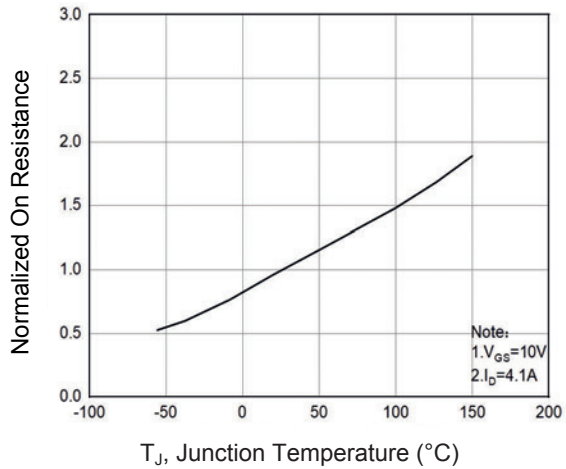


Figure 4. Normalized $R_{DS(ON)}$ vs. T_J

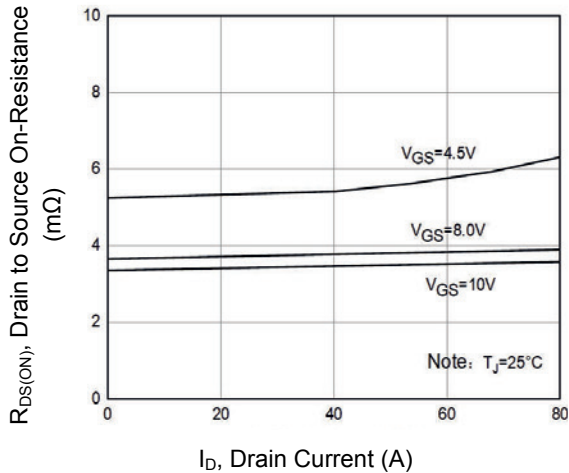


Figure 5. $R_{DS(ON)}$ vs. Drain Current

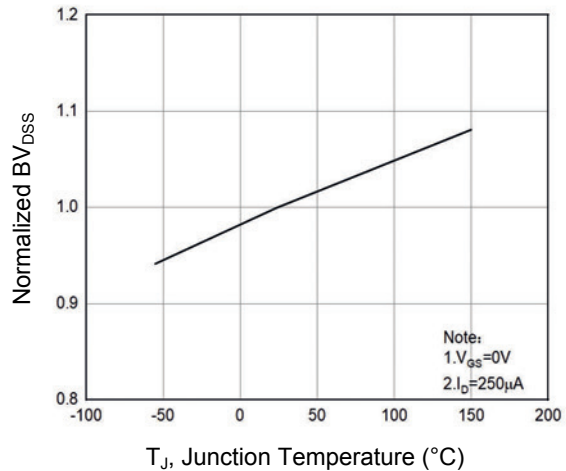


Figure 6. Normalized BV_{DSS} vs. T_J

Typical Electrical and Thermal Characteristic Curves

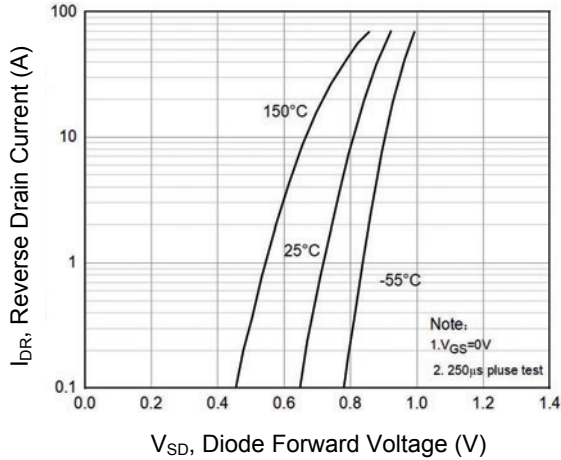


Figure 7. Body Diode Characteristics

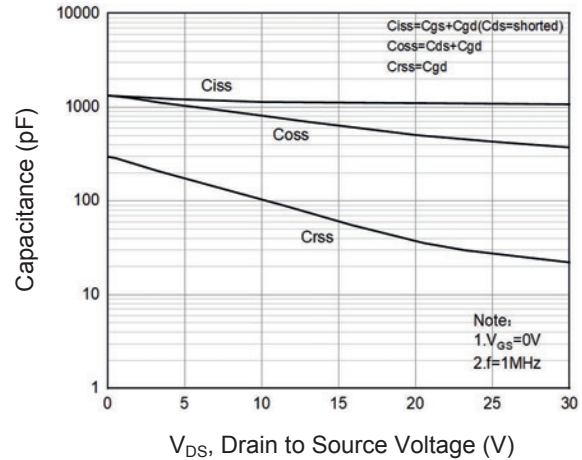


Figure 8. Capacitance Characteristics

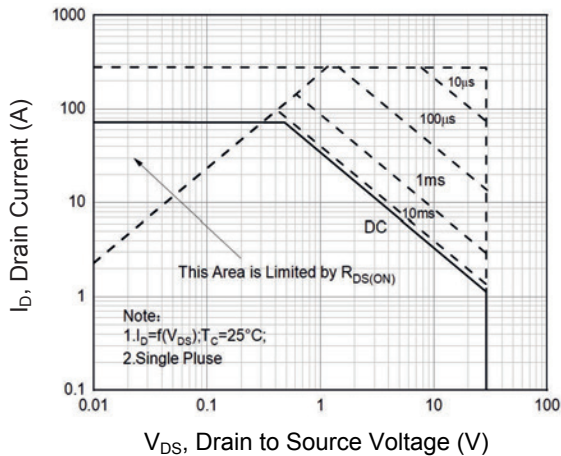


Figure 9. Safe Operation Area

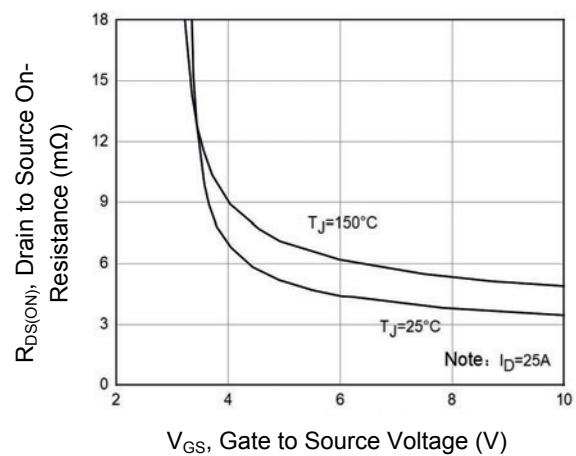
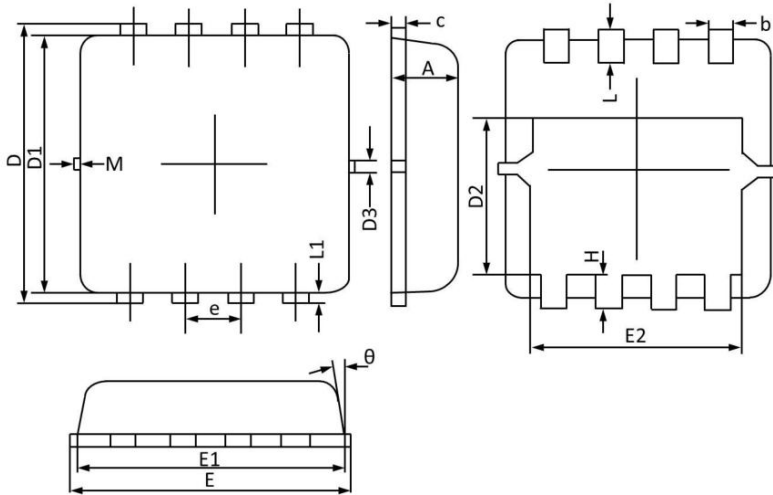


Figure 10. $R_{DS(on)}$ vs. Gate to Source Voltage

Package Outline Dimensions (PPAK3x3)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.700	0.800	0.028	0.031
b	0.250	0.350	0.010	0.013
c	0.100	0.250	0.004	0.009
D	3.250	3.450	0.128	0.135
D1	3.000	3.200	0.119	0.125
D2	1.780	1.980	0.070	0.077
D3	0.130 REF		0.005 REF	
E	3.200	3.400	0.126	0.133
E1	3.000	3.200	0.119	0.125
E2	2.390	2.590	0.094	0.102
e	0.650 BSC		0.026 BSC	
H	0.300	0.500	0.011	0.019
L	0.300	0.500	0.011	0.019
L1	0.130 REF		0.005 REF	
θ	0°	12°	0°	12°
M	0.150 REF		0.006 REF	

Order Information

Device	Package	Marking	Carrier	Quantity
GSGN4R303AU	PPAK3x3	N4R303AU	Tape & Reel	5,000pcs / Reel