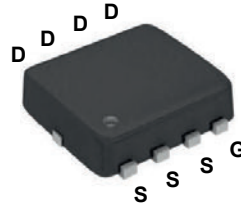
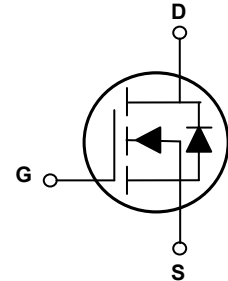


Main Product Characteristics

$V_{(BR)DSS}$	100V
$R_{DS(ON)}$	24m Ω (Max.)
I_D	46A



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 GSFN24010AU 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 ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-to-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, @ Steady-State ($T_C=25^{\circ}\text{C}$) ¹	I_D	46	A
Continuous Drain Current, @ Steady-State ($T_C=100^{\circ}\text{C}$) ¹		26	A
Pulsed Drain Current ($T_C=25^{\circ}\text{C}$) ²	I_{DM}	180	A
Power Dissipation ($T_C=25^{\circ}\text{C}$) ³	P_D	75	W
Single Pulse Avalanche Energy	E_{AS}	9.8	mJ
Single Pulse Avalanche Current	I_{AS}	14	A
Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	62	$^{\circ}\text{C/W}$
Junction-to-Case	$R_{\theta JC}$	2.0	$^{\circ}\text{C/W}$
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +175	$^{\circ}\text{C}$
Soldering Temperature (SMD)	T_{sold}	260	$^{\circ}\text{C}$

Electrical Characteristics (T_A=25°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 =250μA	100	-	-	V
Drain-to-Source Leakage Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V, T _J =25°C	-	-	1.0	μA
		V _{DS} =100V, V _{GS} =0V, T _J =125°C	-	1.2	-	
Gate-to-Source Forward Leakage	I _{GSS}	V _{DS} =0V, V _{GS} =20V	-	-	100	nA
		V _{DS} =0V, V _{GS} =-20V	-	-	-100	
Static Drain-to-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =10A	-	18	24	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.2	-	2.2	V
Dynamic and Switching Characteristics						
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =50V, f=1MHz	-	1053	-	pF
Output Capacitance	C _{oss}		-	131	-	
Reverse Transfer Capacitance	C _{rss}		-	3.8	-	
Total Gate Charge ^{4,5}	Q _g	I _D =10A, V _{DD} =50V, V _{GS} =10V	-	16	-	nC
Gate-to-Source Charge ^{4,5}	Q _{gs}		-	4.1	-	
Gate-to-Drain ("Miller") Charge ^{4,5}	Q _{gd}		-	3.7	-	
Gate Plateau ^{4,5}	V _{plateau}		-	4.0	-	V
Turn-on Delay Time ^{4,5}	t _{d(on)}	V _{DD} =50V, V _{GS} =10V, R _G =1.6Ω, I _D =10A	-	6.4	-	nS
Rise Time ^{4,5}	t _r		-	30	-	
Turn-Off Delay Time ^{4,5}	t _{d(off)}		-	21	-	
Fall Time ^{4,5}	t _f		-	9.4	-	
Gate Resistance	R _g	f=1MHz	-	1.9	-	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I _S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	46	A
Diode Pulse Current	I _{S, pulse}		-	-	180	A
Diode Forward Voltage	V _{SD}	I _S =10A, V _{GS} =0V	-	-	1.4	V
Reverse Recovery Time ⁴	T _{rr}	I _S =10A, V _{GS} =0V, V _R =50V, dI _F /dt=100A/us	-	35	-	nS
Reverse Recovery Charge ⁴	Q _{rr}		-	38	-	nC

Notes:

- The rated value only refers to the maximum absolute value under 25°C shell temperature in the manual.
If the shell temperature is higher than 25°C, the rating shall be reduced according to the actual environmental conditions.
- Pulse time 5us, and the pulse with is limited to the maximum junction temperature.
- The value of dissipated power will change with the temperature. When the temperature is higher than 25°C, the value of dissipated power will decrease by 0.04W/°C with each temperature rise of 1°C.
- Pulse test : Pulse width ≤ 300us, duty cycle ≤ 2%.
- Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

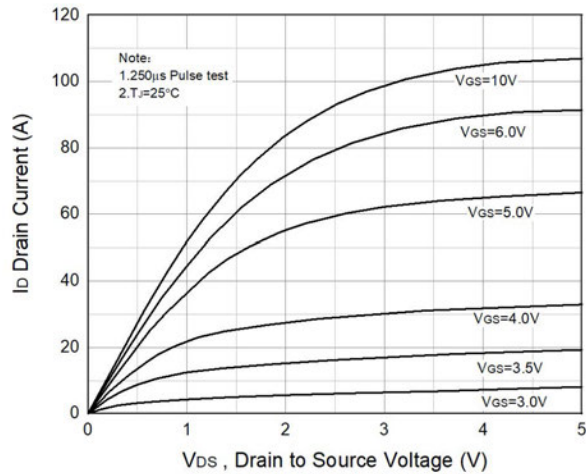


Figure 1. Typical Output Characteristics

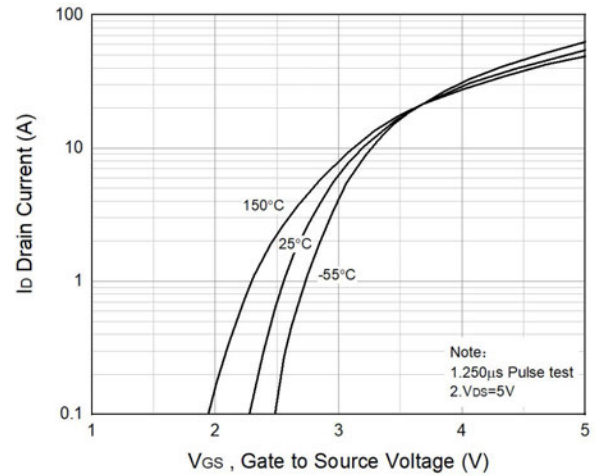


Figure 2. Transfer Characteristics

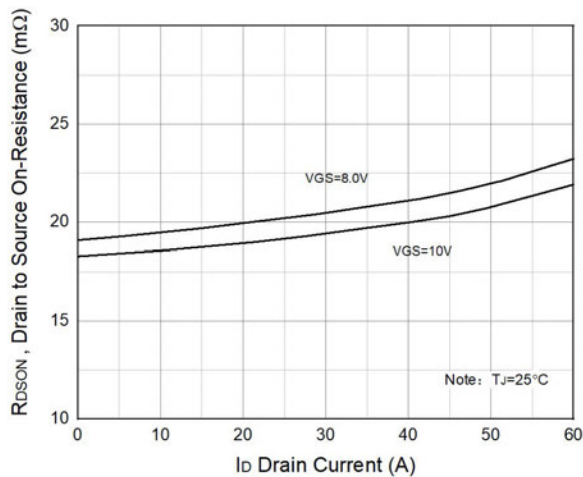


Figure 3. Rds(on) vs. Drain Current

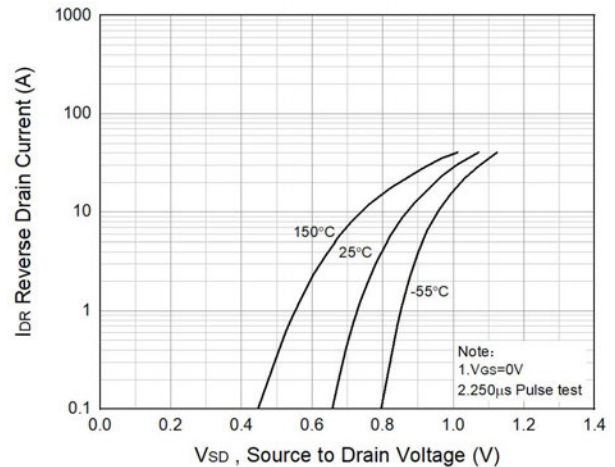


Figure 4. Body Diode Characteristics

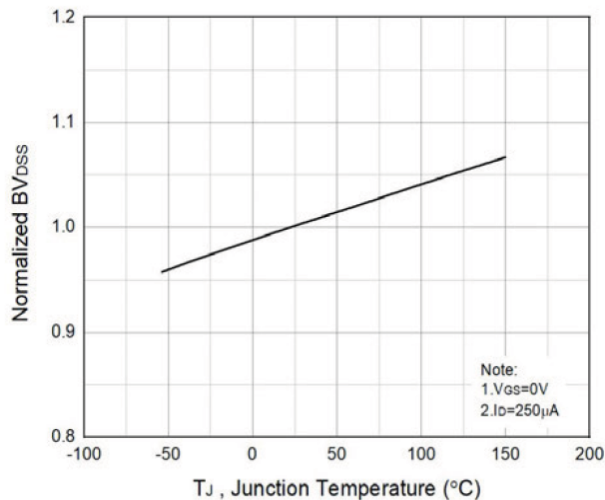


Figure 5. Normalized BVdss vs. Tj

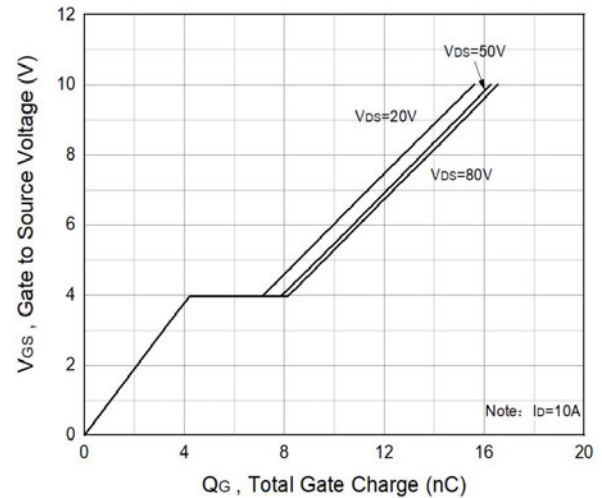


Figure 6. Gate Charge

Typical Electrical and Thermal Characteristic Curves

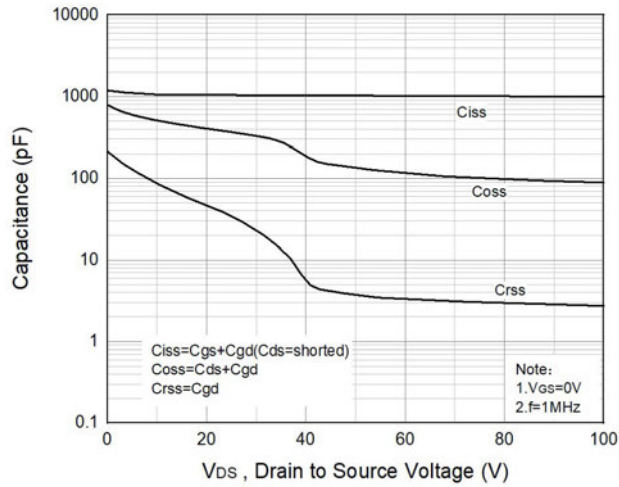


Figure 7. Capacitance Characteristic

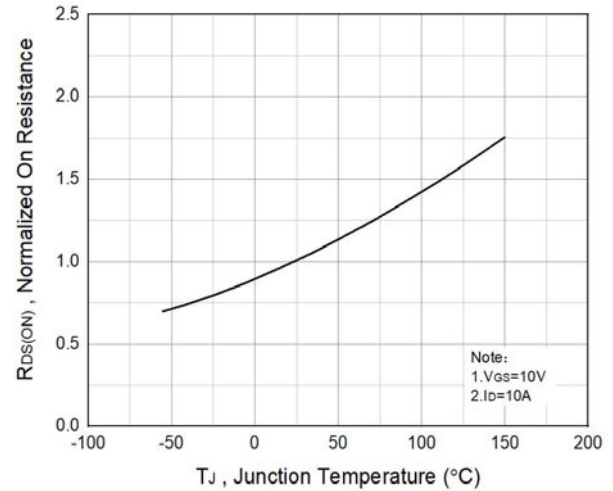


Figure 8. Normalized $R_{DS(on)}$ vs. T_J

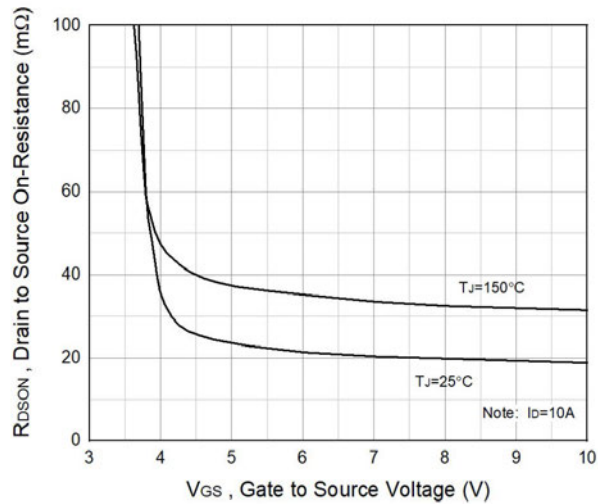


Figure 9. Normalized $R_{DS(on)}$ vs. V_{GS}

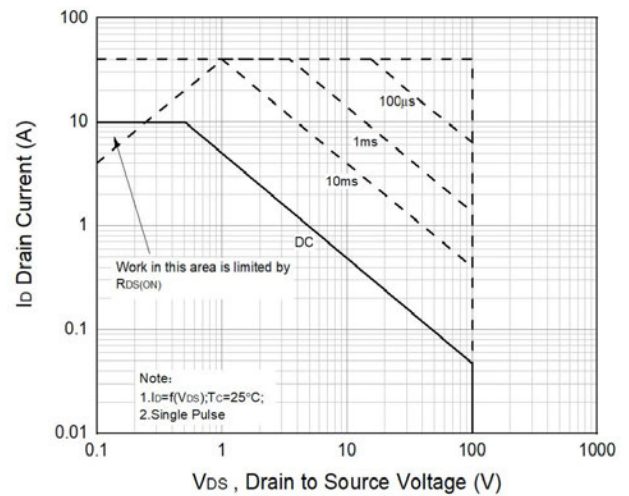
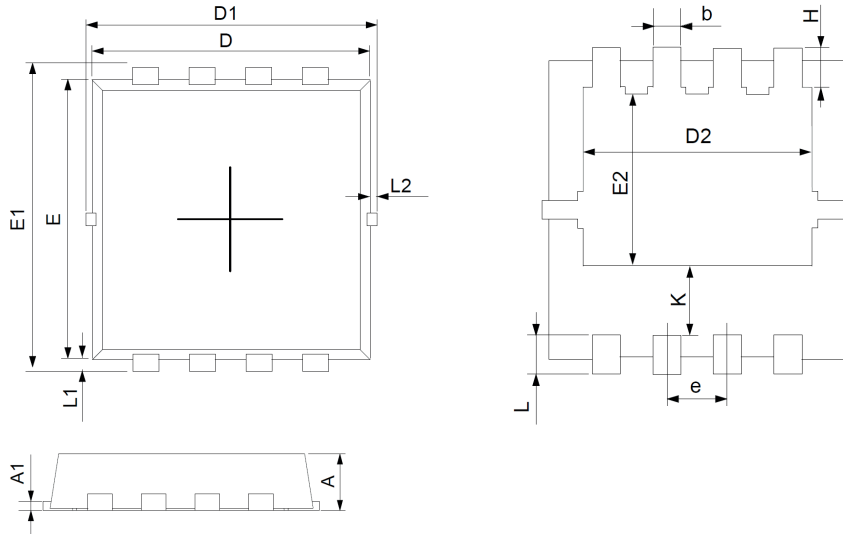


Figure 10. Safe Operation Area

Package Outline Dimensions (PPAK3x3)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.70	0.90	0.028	0.035
A1	0.14	0.20	0.006	0.008
D	3.05	3.25	0.120	0.128
E	2.90	3.10	0.114	0.122
D1	3.10	3.50	0.122	0.138
D2	2.35	2.50	0.093	0.098
E1	3.10	3.50	0.122	0.138
E2	1.64	1.84	0.065	0.072
b	0.25	0.35	0.010	0.014
k	0.59	0.79	0.023	0.031
e	0.55	0.75	0.022	0.030
E4	3.34	3.92	0.131	0.154
L	0.25	0.55	0.010	0.022
L1	0.10	0.20	0.004	0.008
H	0.32	0.52	0.013	0.020

Order Information

Device	Package	Marking	Carrier	Quantity
GSFN24010AU	PPAK3x3	N24010	Tape & Reel	5,000pcs / Reel