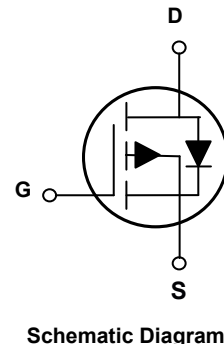
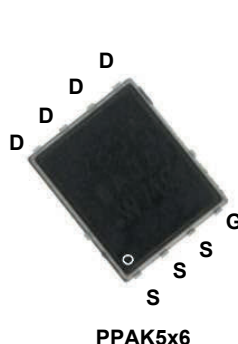


Main Product Characteristics

$V_{(BR)DSS}$	-40V
$R_{DS(ON)}$	13m Ω (Max.)
I_D	-60A



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 GSFP4013AU 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	Max.	Unit
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous ($T_C=25^{\circ}\text{C}$), $V_{GS}=10\text{V}^1$	I_D	-60	A
Drain Current-Continuous ($T_C=100^{\circ}\text{C}$), $V_{GS}=10\text{V}^1$		-36	A
Drain Current-Pulsed ²	I_{DM}	-240	A
Pulsed Source Current (Body Diode) ²	I_{SM}	-240	A
Maximum Power Dissipation ($T_C=25^{\circ}\text{C}$) ³	P_D	110	W
Single Pulse Avalanche Energy ($L=0.3\text{mH}$)	E_{AS}	361	mJ
Single Pulse Avalanche Current ($L=0.3\text{mH}$)	I_{AS}	38	A
Junction-to-Ambient ($t \leq 10\text{s}$) ⁴	$R_{\theta JA}$	62	$^{\circ}\text{C/W}$
Maximum Junction-to-Case	$R_{\theta JC}$	1.59	$^{\circ}\text{C/W}$
Operating Junction Temperature Range	T_J	-55 To +175	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 To +175	$^{\circ}\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250uA	-40	-	-	V
Drain-to-Source Leakage Current	I _{DSS}	V _{DS} =-40V, V _{GS} =0V	-	-	-1	μA
Drain-to-Source Leakage Current		V _{DS} =-40V, V _{GS} =0V T _J =125°C	-	-	-50	μA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =-250uA	-1.1	-1.7	-2.8	V
Drain Static-Source On-Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-20A	-	9.0	13	mΩ
		V _{GS} =-4.5V, I _D =-20A	-	13	17	mΩ
Dynamic and Switching Characteristics						
Total Gate Charge	Q _g	V _{DD} =-20V, I _D =-10A V _{GS} =-10V	-	59	-	nC
Gate-Source Charge	Q _{gs}		-	8.5	-	
Gate-Drain Charge	Q _{gd}		-	13.7	-	
Turn-On Delay Time	t _{d(on)}	V _{DD} =-20V, R _G =3Ω R _L =2.0Ω, V _{GS} =-10V, I _D =-10A	-	17	-	nS
Rise Time	t _r		-	41	-	
Turn-Off Delay Time	t _{d(off)}		-	170	-	
Fall Time	t _f		-	99	-	
Input Capacitance	C _{iss}	V _{DS} =-20V, V _{GS} =0V, F=1MHz	-	3660	-	pF
Output Capacitance	C _{oss}		-	317	-	
Reverse Transfer Capacitance	C _{rss}		-	226	-	
Gate Resitance	R _g	F=1MHz	-	10	-	Ω
Source-Drain Ratings and Characteristics						
Maximum Body-Diode Continuous Current	I _S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	-60	A
Maximum Body-Diode Pulse Current	I _{SM}		-	-	-240	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =-20A, T _J =25°C	-	-1.05	-1.4	V
Reverse Recovery Time	t _{rr}	I _F =-10A di/dt=100A/μs T _J =25°C	-	14.5	-	nS
Reverse Recovery Charge	Q _{rr}		-	4.6	-	nC

Notes:

1. Calculated continuous current based on maximum allowable junction temperature.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. The power dissipation P_D is based on max. junction temperature, using junction-to-case thermal resistance.
4. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$.

Typical Electrical and Thermal Characteristic Curves

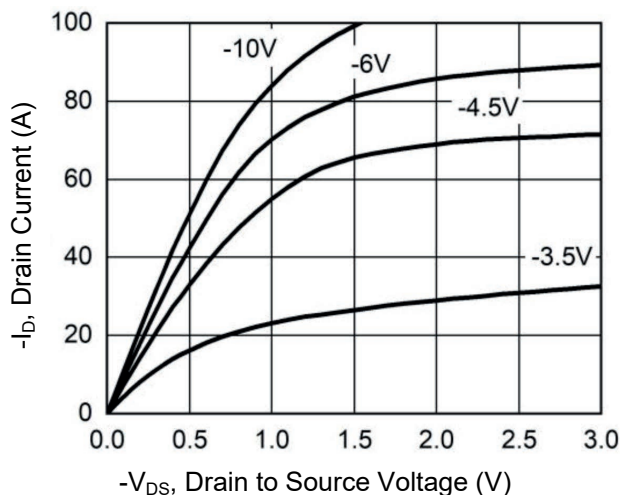


Figure 1. Output Characteristics

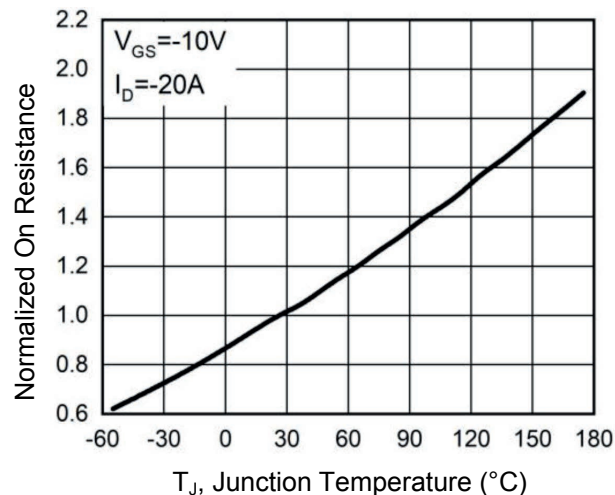


Figure 2. Normalized $R_{DS(ON)}$ vs. T_J

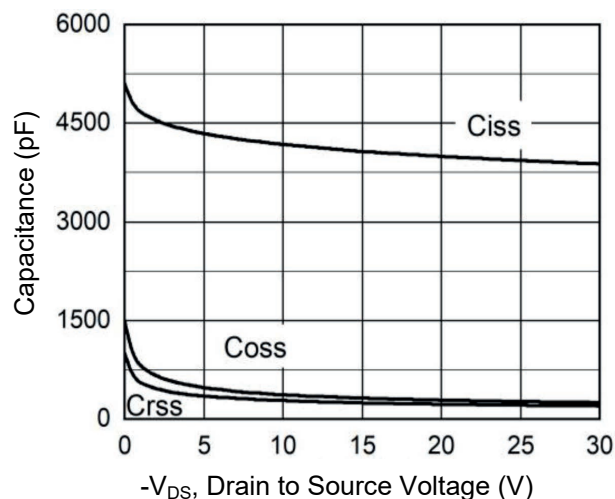


Figure 3. Capacitance Characteristics

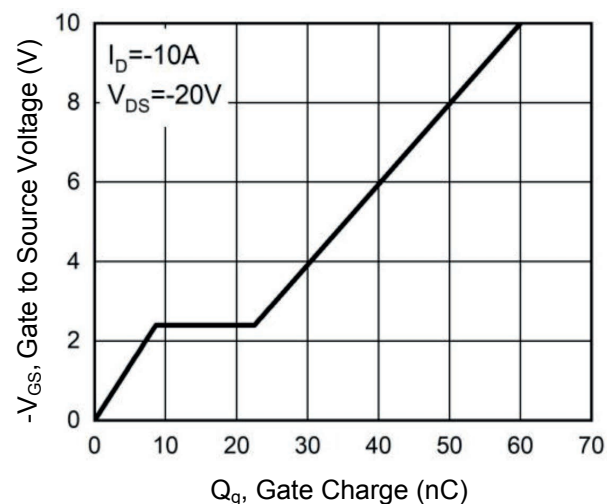


Figure 4. Gate Charge Waveform

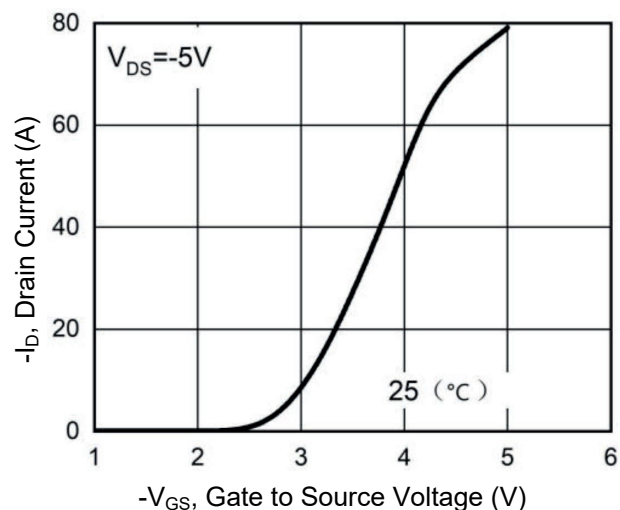


Figure 5. Transfer Characteristics

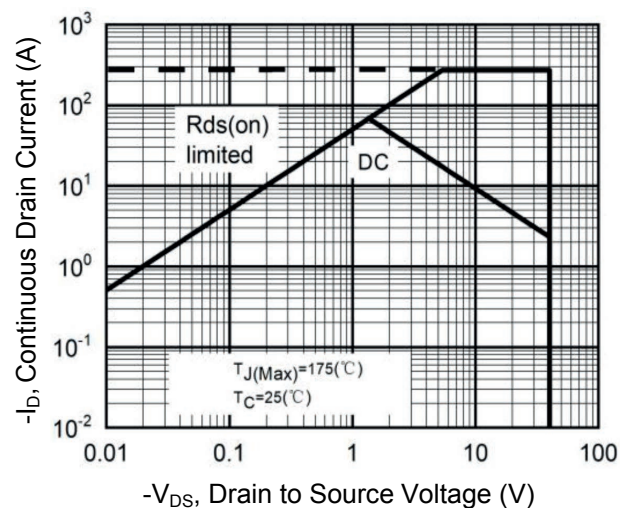
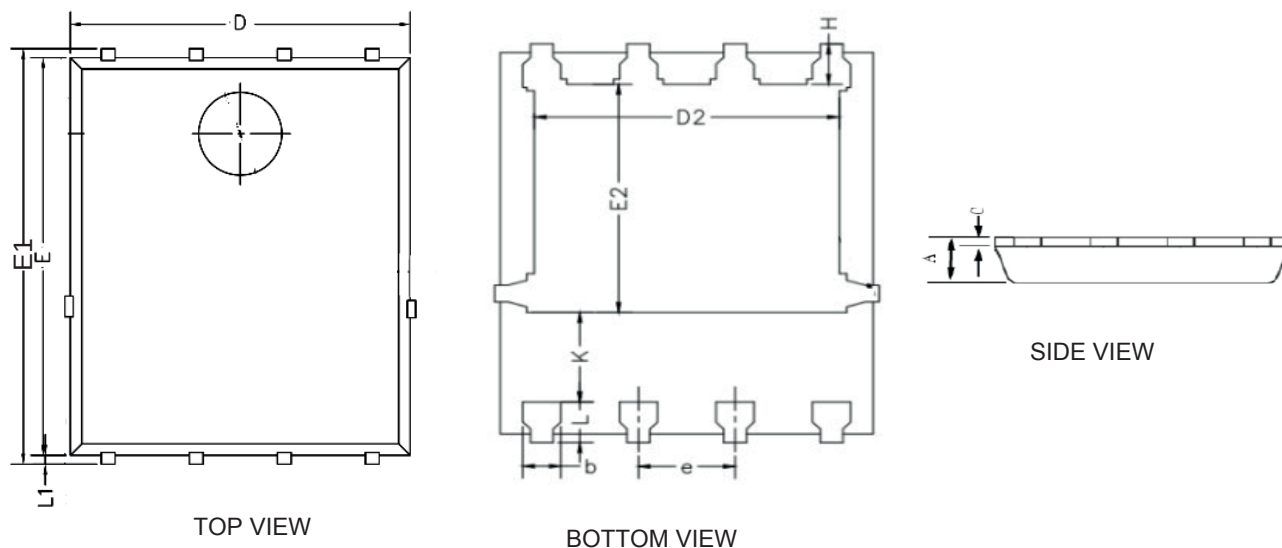


Figure 6. Maximum Safe Operation Area

Package Outline Dimensions (PPAK5x6)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.20	0.035	0.047
b	0.30	0.55	0.012	0.022
C	0.15	0.35	0.006	0.014
D	4.70	5.20	0.185	0.205
D2	3.76	4.20	0.148	0.165
E2	3.30	3.85	0.130	0.152
E	5.60	5.90	0.220	0.232
E1	5.80	6.20	0.228	0.244
K	1.10	-	0.043	-
H	0.45	0.75	0.018	0.030
L	0.45	0.75	0.018	0.030
L1	0.25	0.45	0.010	0.018
e	1.27 BSC		0.050 BSC	

Order Information

Device	Package	Marking	Carrier	Quantity
GSFP4013AU	PPAK5x6	P4013	Tape & Reel	5,000 Pcs / Reel

For more information, please contact us at: inquiry@goodarksemi.com