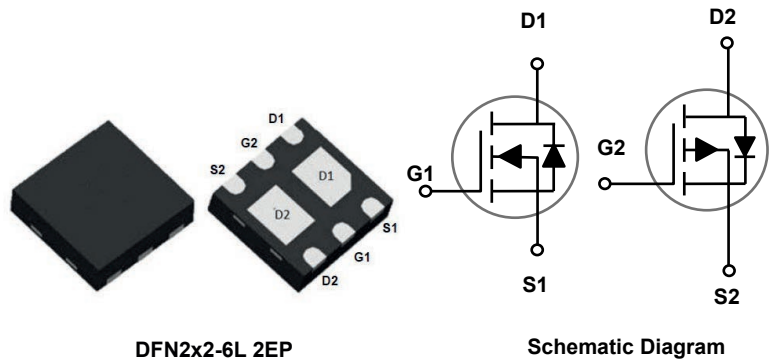


Main Product Characteristics

Polarity	N-Ch	P-Ch
V_{DSS}	20V	-20V
$R_{DS(ON)}$	24m Ω (Max)	47m Ω (Max)
I_D	7.0A	-5.0A



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 GSFB2924 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	Rating		Unit
Drain-Source Voltage	V_{DS}	20	-20	V
Gate-Source Voltage	V_{GS}	± 12	± 12	V
Drain Current-Continuous ($T_C=25^{\circ}\text{C}$)	I_D	7.0	-5.0	A
Drain Current-Continuous ($T_C=100^{\circ}\text{C}$)		5.0	-3.5	A
Drain Current-Pulsed ¹	I_{DM}	28	-20	A
Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	1.5		W
Power Dissipation-Derate Above 25°C		0.012		W/°C
Max. Thermal Resistance Junction to Case	$R_{\theta JC}$	85		°C/W
Max. Thermal Resistance Junction to Ambient	$R_{\theta JA}$	90		°C/W
Storage Temperature Range	T_{STG}	-55 to +150		°C
Operating Junction Temperature Range	T_J	-55 to +150		°C

N-Channel Electrical Characteristics (T_J=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	20	-	-	V
BV _{DSS} Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25°C, I _D =1mA	-	0.02	-	V/°C
Drain-Source Leakage Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V, T _J =25°C	-	-	1	μA
		V _{DS} =16V, V _{GS} =0V, T _J =125°C	-	-	10	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V	-	-	±10	μA
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =4.5V, I _D =5A	-	14	24	mΩ
		V _{GS} =2.5V, I _D =4A	-	18	28	
		V _{GS} =1.8V, I _D =4A	-	26	32	
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250μA	0.4	0.65	1	V
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)}		-	-2	-	mV/°C
Forward Transconductance	g _{fs}	V _{DS} =5V, I _S =5A	-	14	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{2,3}	Q _g	V _{DS} =10V, I _D =5A, V _{GS} =4.5V	-	9.2	-	nC
Gate-Source Charge ^{2,3}	Q _{gs}		-	1.6	-	
Gate-Drain Charge ^{2,3}	Q _{gd}		-	2.1	-	
Turn-On Delay Time ^{2,3}	t _{d(on)}	V _{DD} =10V, R _G =3Ω, V _{GS} =4.5V, I _D =5A	-	11	-	nS
Rise Time ^{2,3}	t _r		-	34	-	
Turn-Off Delay Time ^{2,3}	t _{d(off)}		-	54	-	
Fall Time ^{2,3}	t _f		-	52	-	
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, F=1MHz	-	671	-	pF
Output Capacitance	C _{oss}		-	150	-	
Reverse Transfer Capacitance	C _{rss}		-	90	-	
Source-Drain Ratings and Characteristics						
Continuous Source Current	I _S	V _G =V _D =0V, Force Current	-	-	7.0	A
Pulsed Source Current	I _{SM}		-	-	28.0	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =3A, T _J =25°C	-	-	1.2	V

Note:

1. Repetitive rating: pulsed width limited by maximum junction temperature.
2. Pulse test: pulse width ≤ 300us, duty cycle ≤ 2%.
3. Essentially independent of operation temperature.

P-Channel Electrical Characteristics (T_J=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250μA	-20	-	-	V
BV _{DSS} Temperature Coefficient	ΔBV _{DSS} / ΔT _J	Reference to 25°C, I _D =-1mA	-	-0.02	-	V/°C
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V, T _J =25°C	-	-	-1	μA
		V _{DS} =-16V, V _{GS} =0V, T _J =125°C	-	-	-10	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V	-	-	±10	μA
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =-4.5V, I _D =-3A	-	35	47	mΩ
		V _{GS} =-2.5V, I _D =-2A	-	45	67	
		V _{GS} =-1.8V, I _D =-1A	-	67	99	
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =-250μA	-0.5	-0.75	-1	V
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)}		-	2	-	mV/°C
Forward Transconductance	g _{fs}	V _{DS} =-5V, I _S =-3A	-	13	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{2,3}	Q _g	V _{DS} =-10V, I _D =-3A, V _{GS} =-4.5V	-	9.1	-	nC
Gate-Source Charge ^{2,3}	Q _{gs}		-	1.6	-	
Gate-Drain Charge ^{2,3}	Q _{gd}		-	2.0	-	
Turn-On Delay Time ^{2,3}	t _{d(on)}	V _{DD} =-10V, R _G =3Ω, V _{GS} =-4.5V, I _D =-5A	-	12	-	nS
Rise Time ^{2,3}	t _r		-	34	-	
Turn-Off Delay Time ^{2,3}	t _{d(off)}		-	54	-	
Fall Time ^{2,3}	t _f		-	52	-	
Input Capacitance	C _{iss}	V _{DS} =-10V, V _{GS} =0V, F=1MHz	-	854	-	pF
Output Capacitance	C _{oss}		-	149	-	
Reverse Transfer Capacitance	C _{rss}		-	89	-	
Source-Drain Ratings and Characteristics						
Continuous Source Current	I _S	V _G =V _D =0V, Force Current	-	-	-5.0	A
Pulsed Source Current	I _{SM}		-	-	-20.0	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =-3A, T _J =25°C	-	-	-1.2	V

Note:

1. Repetitive rating: pulsed width limited by maximum junction temperature.
2. Pulse test: pulse width ≤ 300us, duty cycle ≤ 2%.
3. Essentially independent of operation temperature.

N-Channel Typical Electrical and Thermal Characteristic Curves

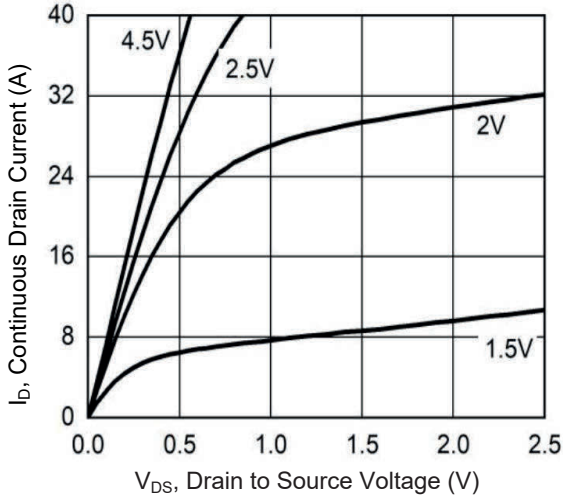


Figure 1. Output Characteristics

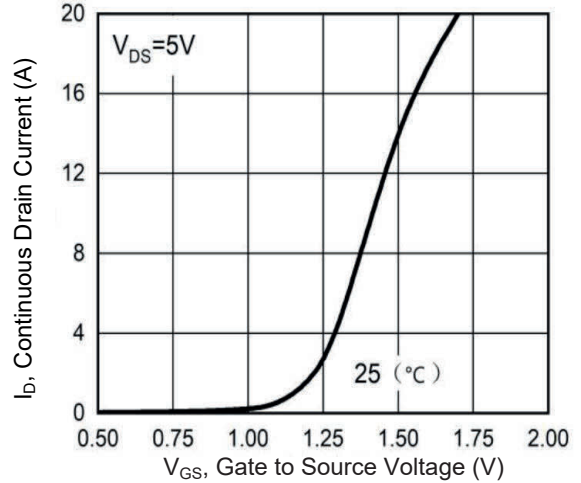


Figure 2. Transfer Characteristics

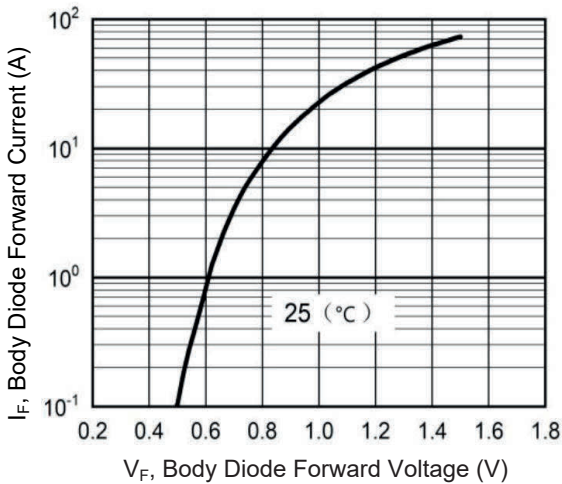


Figure 3. Body Diode Characteristics

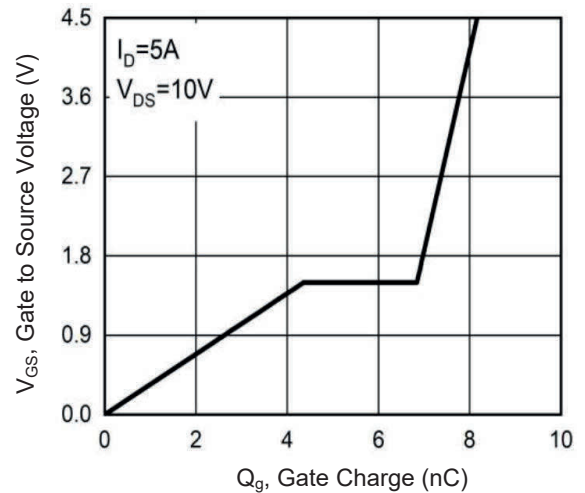


Figure 4. Gate Charge Waveform

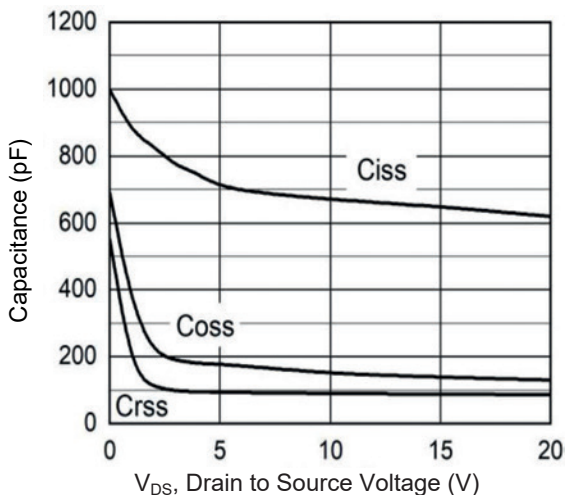


Figure 5. Capacitance Characteristics

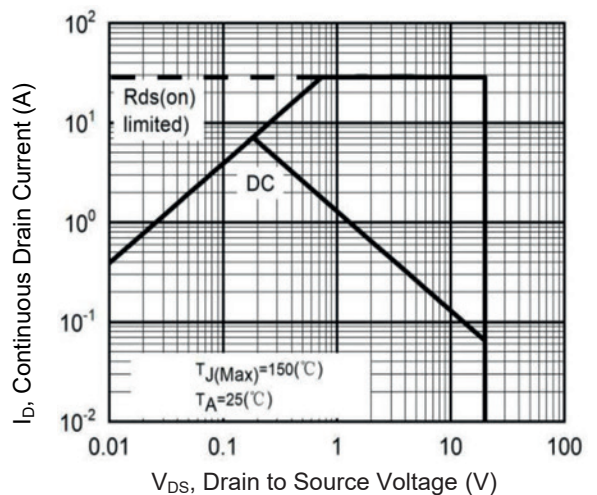


Figure 6. Maximum Safe Operation Area

P-Channel Typical Electrical and Thermal Characteristic Curves

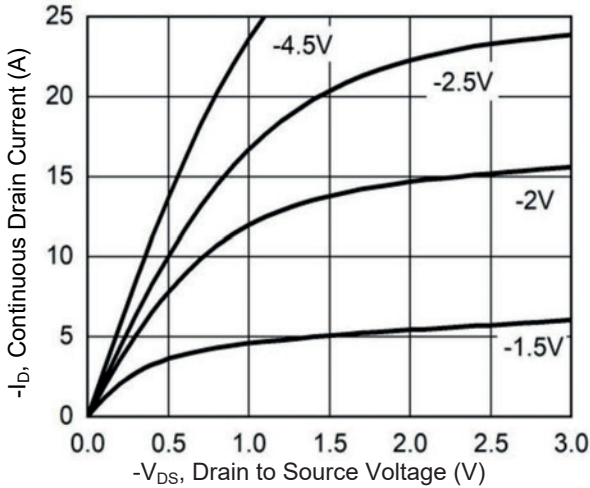


Figure 1. Output Characteristics

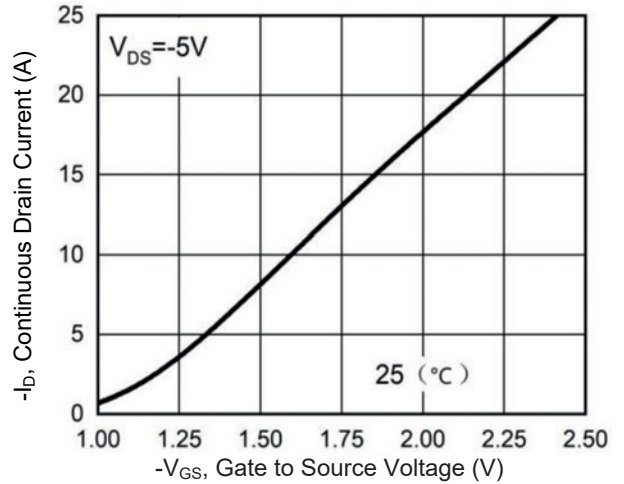


Figure 2. Transfer Characteristics

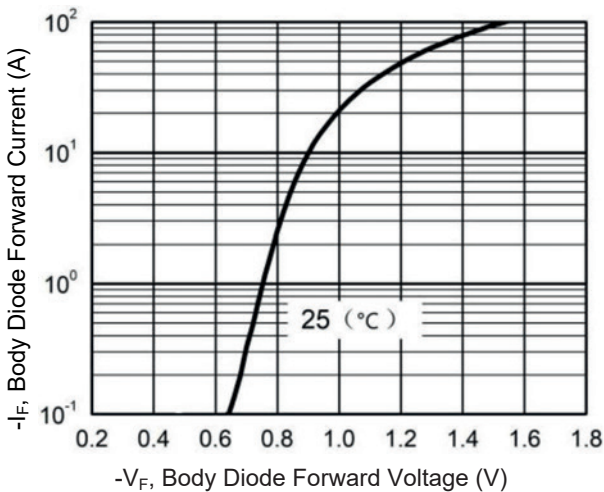


Figure 3. Body Diode Characteristics

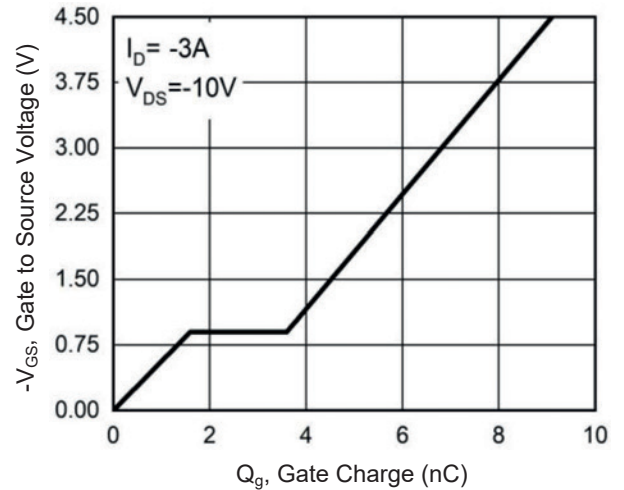


Figure 4. Gate Charge Waveform

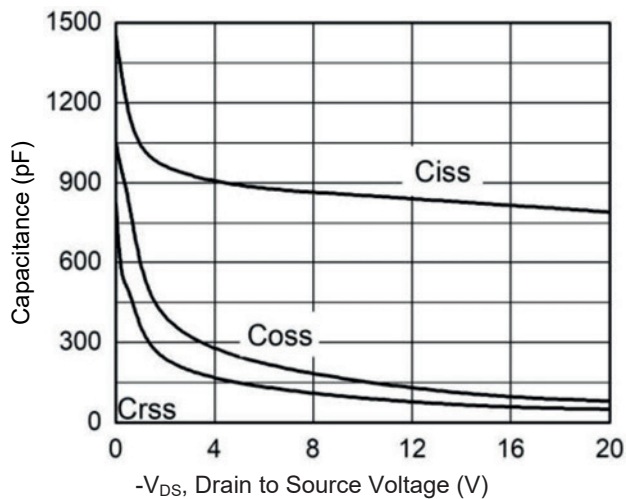


Figure 5. Capacitance Characteristics

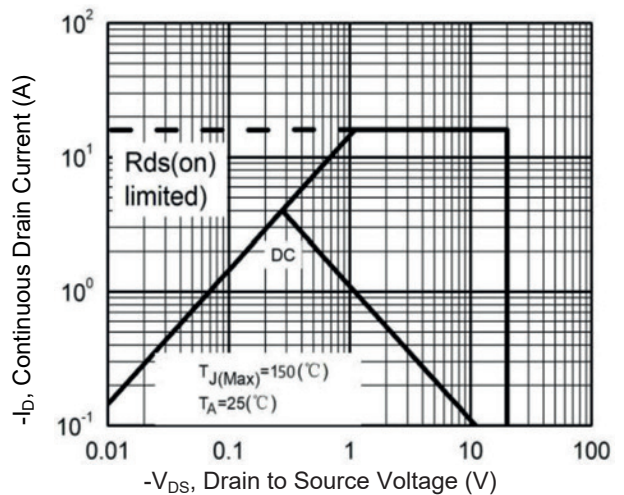
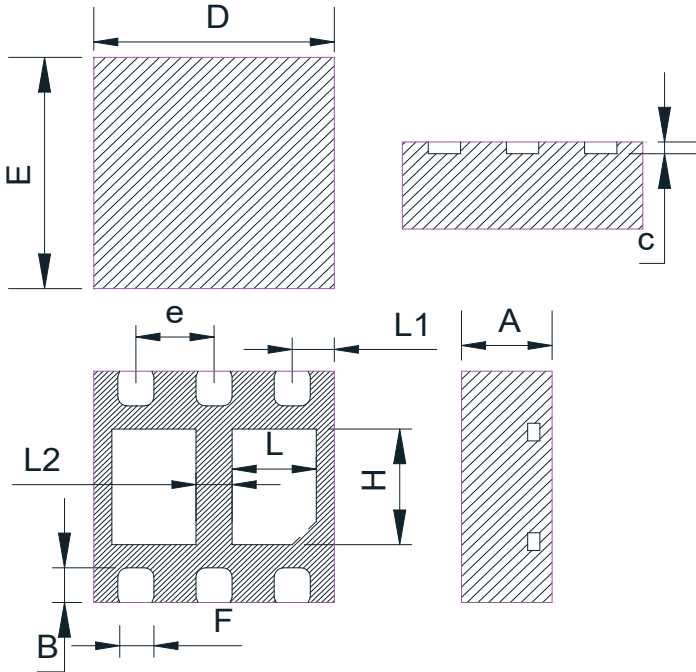


Figure 6. Maximum Safe Operation Area

Package Outline Dimensions (DFN2x2-6L 2EP)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.680	0.800	0.027	0.031
B	0.200	0.400	0.008	0.016
C	0.153	0.253	0.006	0.010
D	1.900	2.100	0.075	0.083
E	1.900	2.100	0.075	0.083
e	0.550	0.700	0.022	0.028
F	0.200	0.400	0.008	0.016
H	0.850	1.100	0.033	0.043
L	0.550	0.800	0.022	0.031
L1	0.250	0.450	0.010	0.018
L2	0.200	0.400	0.008	0.016

Order Information

Device	Package	Marking	Carrier	Quantity
GSFB2924	DFN2x2-6L 2EP	B2924	Tape & Reel	3,000 Pcs / Reel

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