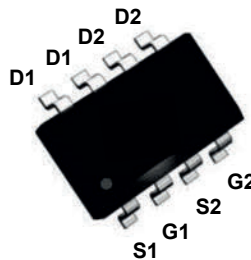
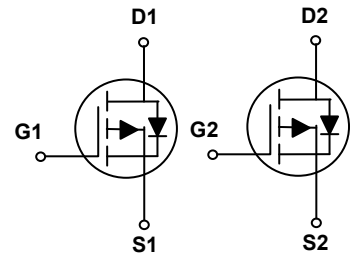


Main Product Characteristics

BV_{DSS}	-60V
$R_{DS(ON)}$	72m Ω (Typ.)
I_D	-3.6A



SOP-8



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 GSFQ0603 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}	-60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous ($T_A=25^\circ\text{C}$)	I_D	-3.6	A
Drain Current-Continuous ($T_A=70^\circ\text{C}$)		-2.8	A
Drain Current-Pulsed ¹	I_{DM}	-13.2	A
Single Pulse Avalanche Energy ²	E_{AS}	25	mJ
Single Pulse Avalanche Current ²	I_{AS}	-18	A
Power Dissipation ($T_A=25^\circ\text{C}$)	P_D	2	W
Power Dissipation-Derate Above 25°C		0.016	W/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$
Storage Temperature Range	T_{STG}	-55 To +150	$^\circ\text{C}$
Operating Junction Temperature Range	T_J	-55 To +150	$^\circ\text{C}$

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	-60	-	-	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-60V, V _{GS} =0V, T _J =25°C	-	-	-1	μA
		V _{DS} =-48V, V _{GS} =0V, T _J =125°C	-	-	-10	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-2A	-	72	96	mΩ
		V _{GS} =-4.5V, I _D =-1A	-	82	130	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1.0	-1.8	-2.7	V
Forward Transconductance	g _{fs}	V _{DS} =-10V, I _D =-1A	-	3	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{2,3}	Q _g	V _{DS} =-30V, I _D =-1A, V _{GS} =-10V	-	10	15	nC
Gate-Source Charge ^{2,3}	Q _{gs}		-	1.6	3.2	
Gate-Drain Charge ^{2,3}	Q _{gd}		-	3	6	
Turn-On Delay Time ^{2,3}	t _{d(on)}	V _{DD} =-30V, R _G =6Ω, V _{GS} =-10V, I _D =-1A	-	8	16	nS
Rise Time ^{2,3}	t _r		-	15.4	30	
Turn-Off Delay Time ^{2,3}	t _{d(off)}		-	42.8	80	
Fall Time ^{2,3}	t _f		-	8.4	16	
Input Capacitance	C _{iss}	V _{DS} =-30V, V _{GS} =0V, F=1MHz	-	720	1080	pF
Output Capacitance	C _{oss}		-	42	63	
Reverse Transfer Capacitance	C _{rss}		-	32	48	
Gate Resistance	R _g	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	22	-	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current	I _S	V _G =V _D =0V, Force Current	-	-	-3.3	A
Pulsed Source Current	I _{SM}		-	-	-6.6	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =-1A, T _J =25°C	-	-	-1	V
Reverse Recovery Time	T _{rr}	V _R =-50V, I _S =-1A, di/dt=100A/μs, T _J =25°C	-	30	-	nS
Reverse Recovery Charge	Q _{rr}		-	15	-	nC

Notes:

1. Repetitive rating: pulsed width limited by maximum junction temperature.
2. V_{DD}=-25V, V_{GS}=-10V, L=0.1mH, I_{AS}=-18A, R_G=25Ω, starting T_J=25°C.
3. Pluse test: pulse width ≤300us, duty cycle ≤2%.

Typical Electrical and Thermal Characteristic Curves

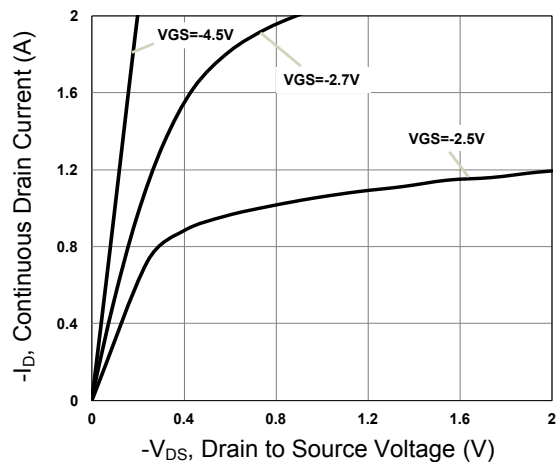


Figure 1. Typical Output Characteristics

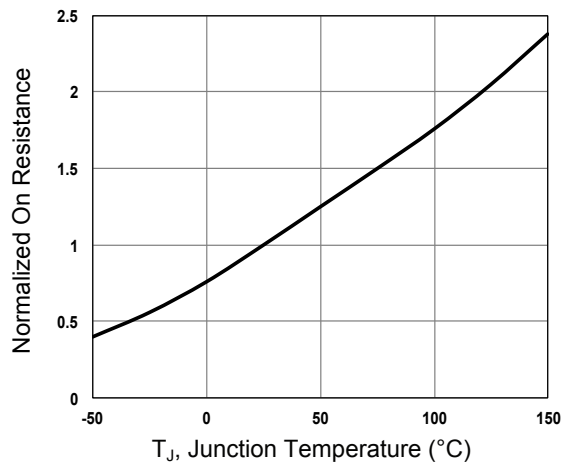


Figure 2. Normalized $R_{DS(ON)}$ vs. T_J

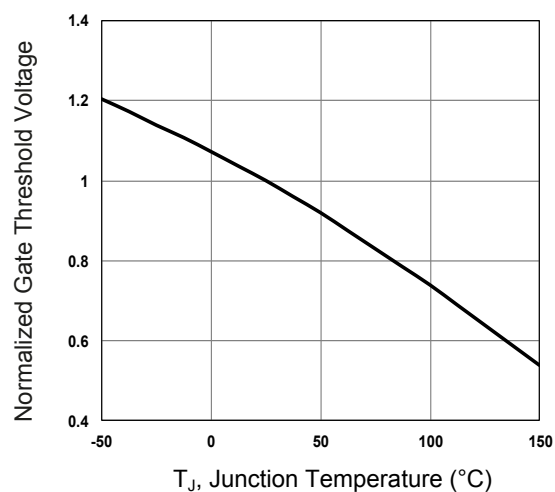


Figure 3. Normalized V_{th} vs. T_J

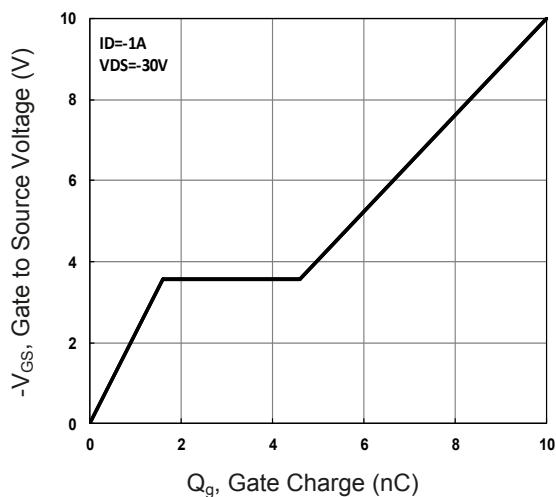


Figure 4. Gate Charge Waveform

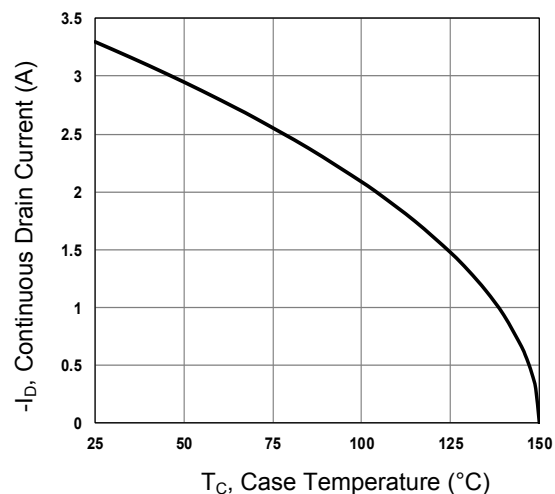


Figure 5. Continuous Drain Current vs. T_C

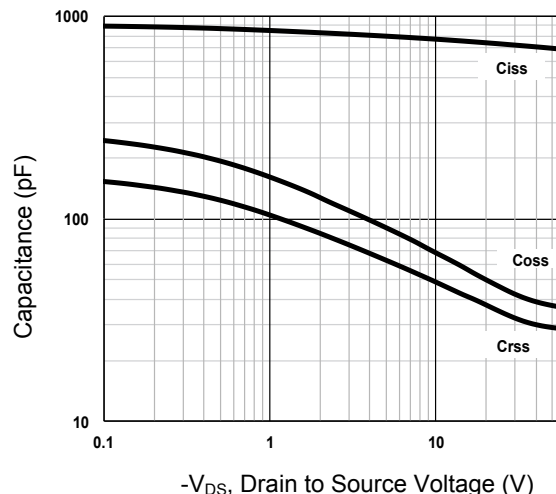


Figure 6. Capacitance Characteristics

Typical Electrical and Thermal Characteristic Curves

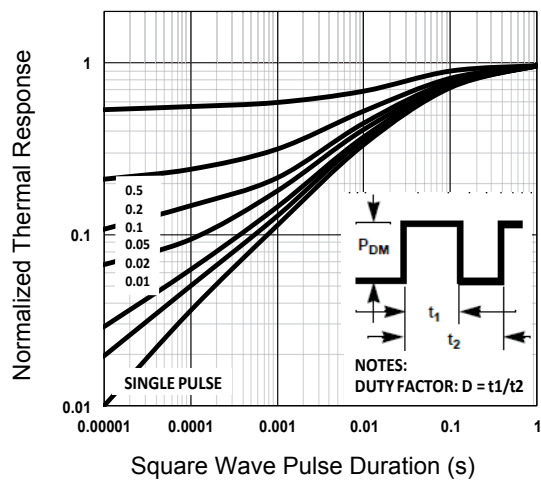


Figure 7. Normalized Transient Impedance

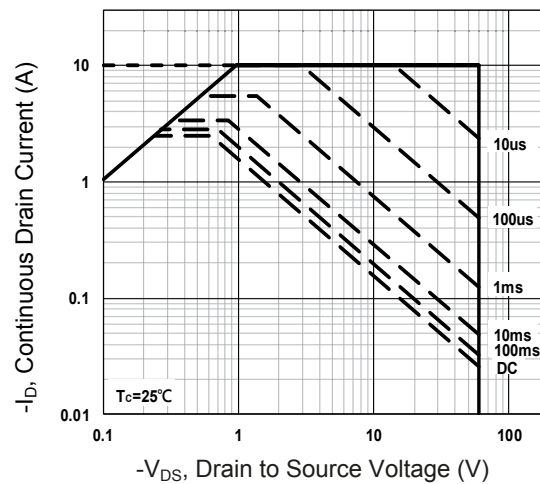
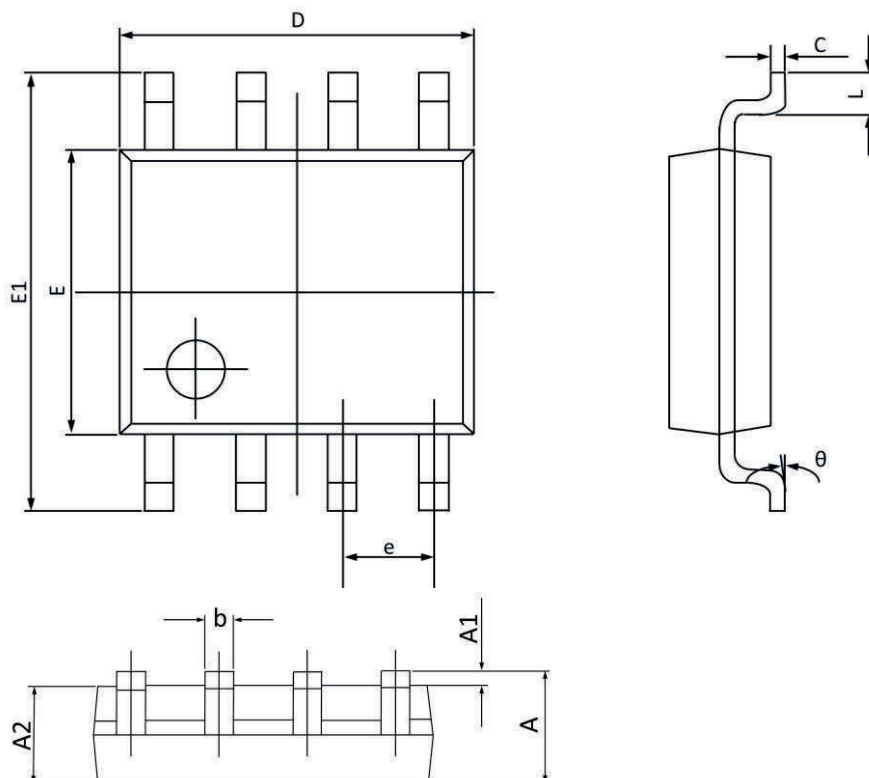


Figure 8. Maximum Safe Operation Area

Package Outline Dimensions (SOP-8)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.300	1.500	0.051	0.059
b	0.350	0.490	0.014	0.019
C	0.190	0.260	0.007	0.010
D	4.700	5.100	0.185	0.201
E	3.700	4.100	0.146	0.161
E1	5.800	6.200	0.228	0.244
e	1.27 BSC		0.05 BSC	
L	0.400	0.900	0.016	0.035
θ	0°	8°	0°	8°

Order Information

Device	Package	Marking	Carrier	Quantity
GSFQ0603	SOP-8	Q0603	Tape & Reel	3,000 Pcs / Reel

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