GOOD-ARK SEMICONDUCTOR

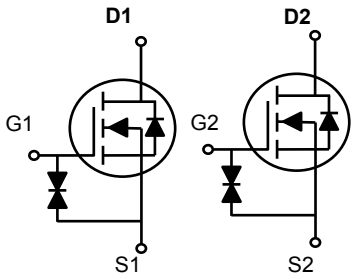
GSFJ0300

30V Dual N-Channel MOSFETs

Main Product Characteristics

BV_{DSS}	30V
$R_{DS(ON)}$	450mΩ
I_D	600mA

SOT-563



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 GSFJ03600 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 supply 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-Source Voltage	V_{GS}	±12	V
Drain Current-Continuous (T_A=25°C)	I_D	600	mA
Drain Current-Continuous (T_A=70°C)		480	
Drain Current-Pulsed[1]	I_{DM}	2.4	A
Power Dissipation (T_A=25°C)	P_D	313	mW
Power Dissipation-Derate above 25°C		2.5	mW/°C
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	400	°C/W
Operating Junction Temperature Range	T_J	-55 To +150	°C
Storage Temperature Range	T_{STG}	-55 To +150	°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=250uA	30	-	-	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V, T_J=25°C	-	-	1	μA
		V_{DS}=24V, V_{GS}=0V, T_J=125°C	-	-	10	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±12V, V_{DS}=0V	-	-	±20	μA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=0.3A	-	370	450	mΩ
		V_{GS}=2.5V, I_D=0.2A	-	510	650	
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250uA	0.5	0.7	1.2	V
Forward Transconductance	g_{fs}	V_{DS}=4V, I_D=0.3A	-	0.8	-	S
Dynamic and Switching Characteristics						
Total Gate Charge[2,3]	Q_g	V_{DS}=15V, I_D=0.3A V_{GS}=4.5V	-	2.6	5.2	nC
Gate-Source Charge[2,3]	Q_{gs}		-	0.9	1.8	
Gate-Drain Charge[2,3]	Q_{gd}		-	0.6	1.2	
Turn-On Delay Time[2,3]	$t_{d(on)}$	V_{DD}=15V, R_G=10Ω V_{GS}=4.5V, I_D=0.3A	-	5.5	11	nS
Rise Time[2,3]	t_r		-	4	8	
Turn-Off Delay Time[2,3]	$t_{d(off)}$		-	14.5	29	
Fall Time[2,3]	t_f		-	6.5	13	
Input Capacitance	C_{iss}	V_{DS}=15V, V_{GS}=0V, F=1MHz	-	43	65	pF
Output Capacitance	C_{oss}		-	16	25	
Reverse Transfer Capacitance	C_{rss}		-	8.5	15	
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I_S	V_G=V_D=0V, Force Current	-	-	0.6	A
Pulsed Source Current	I_{SM}		-	-	1.2	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=0.3A, T_J=25°C	-	-	1	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 operating temperature.

Typical Electrical and Thermal Characteristic Curves

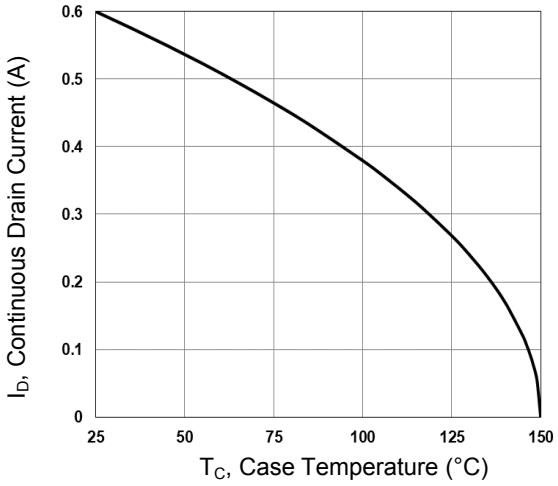


Figure 1. Continuous Drain Current vs. T_C

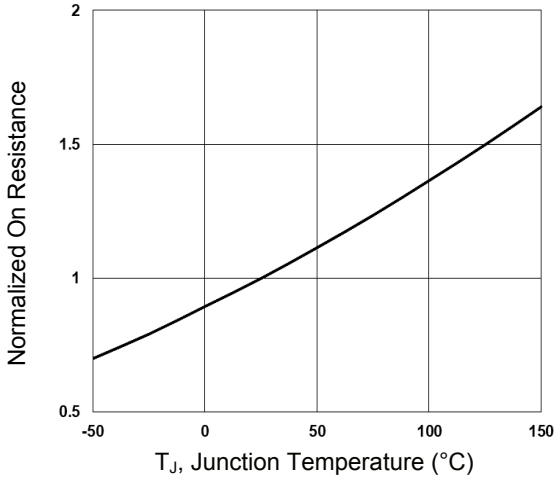


Figure 2. Normalized R_{DSON} vs. T_J

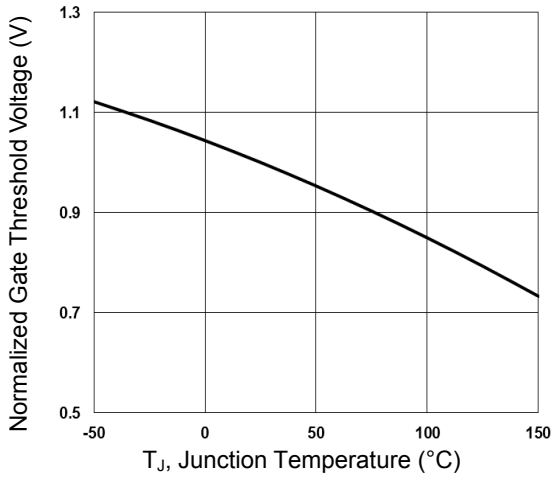


Figure 3. Normalized V_{th} vs. T_J

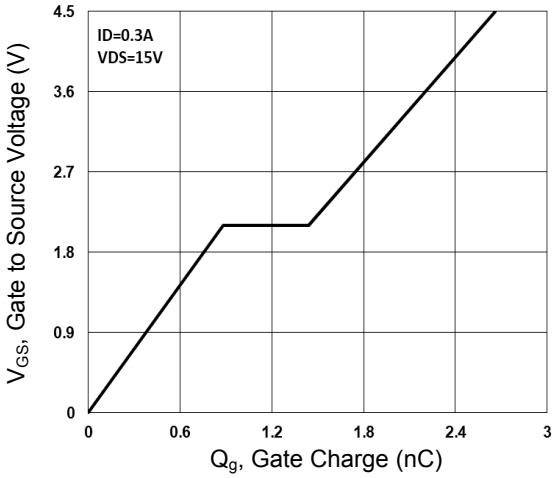


Figure 4. Gate Charge Characteristics

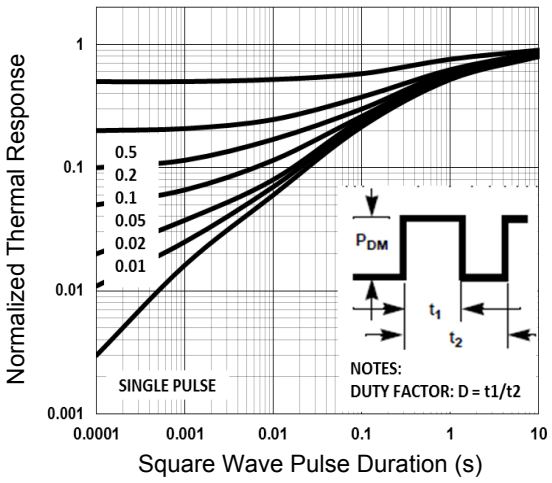


Figure 5. Normalized Transient Impedance

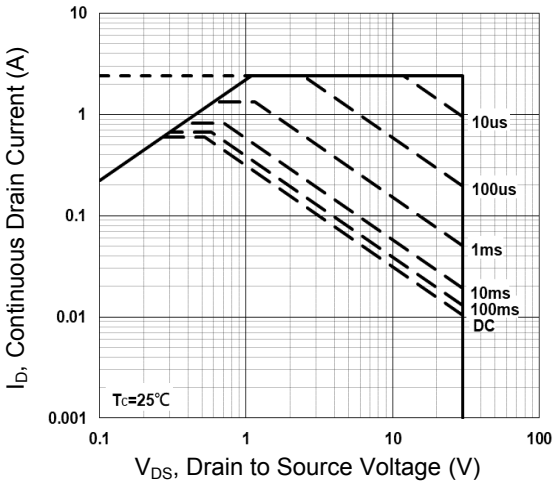
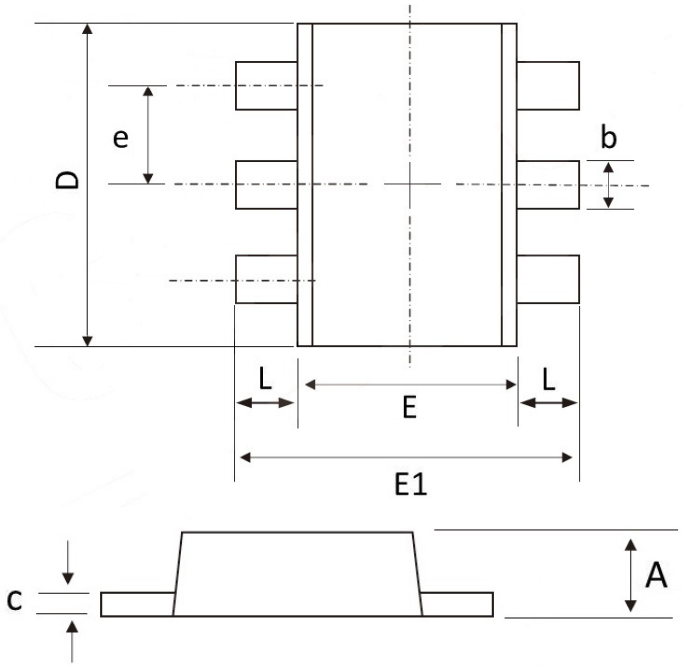


Figure 6. Maximum Safe Operation Area

Package Outline Dimensions (SOT-563)



Symbol	Dimensions in Milimeters		Dimensions in Inches	
	Max	Min	Max	Min
A	0.600	0.500	0.024	0.020
b	0.300	0.150	0.012	0.006
c	0.180	0.100	0.007	0.004
D	1.700	1.500	0.067	0.059
E	1.250	1.100	0.049	0.043
E1	1.700	1.550	0.067	0.061
e	0.500 BSC		0.020 BSC	
L	0.300	0.100	0.012	0.004