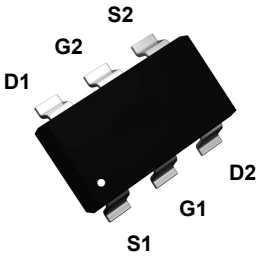
GOOD-ARK SEMICONDUCTOR

GSFK0201PQ

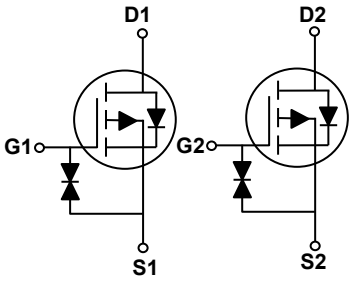
20V Dual P-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	-20V
$R_{DS(ON)}$	1.4Ω (Max.)
I_D	-0.5A



SOT-363



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
- ESD level HBM 2KV

Applications

- Portable appliances
- Battery management

Description

The GSFK0201PQ 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°C unless otherwise specified)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±10	V
Drain Current[1]		I_D	-500	mA
Pulsed Drain Current[2]		I_{DM}	-2	A
Power Dissipation[3]		P_D	400	mW
Thermal Resistance Junction to Ambient[3]	t ≤ 10 s	$R_{\theta JA}$	245	°C/W
	Steady State		312	
Operating Junction and Storage Temperature Range		T_J/T_{STG}	-55 to +150	℃

Notes:

1. The maximum current limited by package.
2. Pulse test: Pulse width ≤ 100μs, duty cycle ≤ 2%, repetitive rating, pulse width limited by junction temperature T_{jmax}.
3. Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate.

Electrical Characteristics (T_A=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=-250μA	-20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-20V	-	-	-1	μA
Gate-Source Leakage	I_{GSS}	V_{GS}=±10V	-	-	±10	μA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-0.5	-	-1	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-0.43A	-	-	0.9	Ω
		V_{GS}=-2.5V, I_D=-0.3A	-	-	1.4	
Forward Transconductance	gfs	V_{DS}=-5V, I_D=-0.4A	-	1	-	S
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-10V, F=1MHz	-	45	-	pF
Output Capacitance	C_{oss}		-	15	-	
Reverse Transfer Capacitance	C_{rss}		-	7	-	
Gate Charge Total	Q_g	V_{DS}=-10V, V_{GS} =-4.5V, I_D=-0.3A	-	1.1	-	nC
		V_{DS}=-10V, V_{GS}=-2.5V, I_D=-0.3A	-	0.6	-	
Gate to Source Charge	Q_{gs}	V_{DS}=-10V, V_{GS}=-4.5V, I_D=-0.3A	-	0.24	-	
Gate to Drain Charge	Q_{gd}		-	0.1	-	
Turn-On Delay Time	$t_{d(on)}$	V_{DS}=-10V, V_{GS}=-4.5V, I_D=-1A, R_g=3.3Ω	-	57	-	ns
Turn-On Rise Time	t_r		-	40	-	
Turn-Off Delay Time	$t_{d(off)}$		-	34	-	
Turn-Off Fall Time	t_f		-	16	-	
Source-Drain Ratings and Characteristics						
Drain-Source Diode Forward Voltage	V_{SD}	I_S=-0.4A, V_{GS}=0V	-	-	-1.2	V
Body-Diode Continuous Current	I_S	-	-	-	-500	mA
Body Diode Reverse Recovery Time	T_{rr}	I_S=-1A, di/dt=50A/μs	-	88	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}		-	16	-	nC

Typical Electrical and Thermal Characteristic Curves

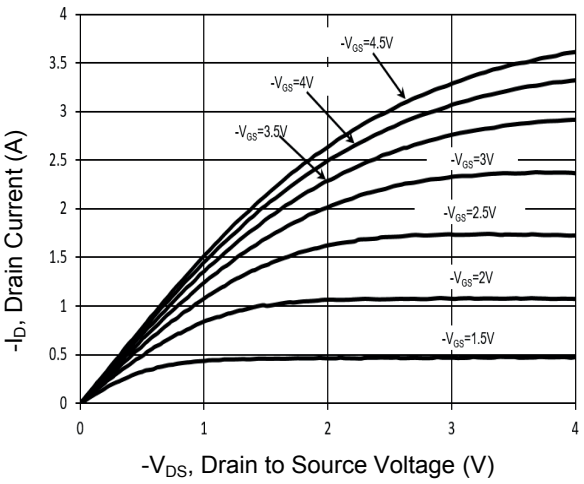


Figure 1. Typical Output Characteristics

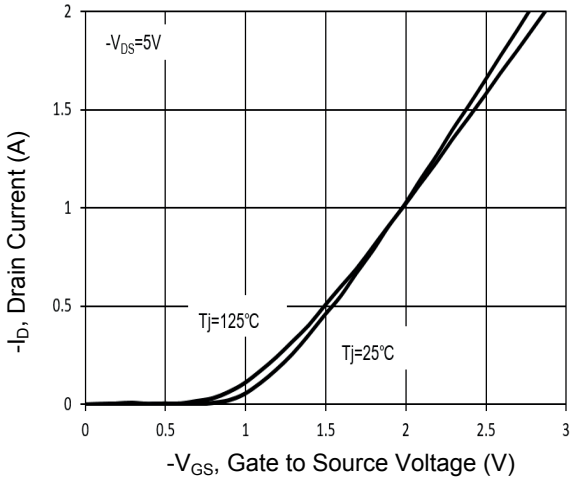


Figure 2. Typical Transfer Characteristics

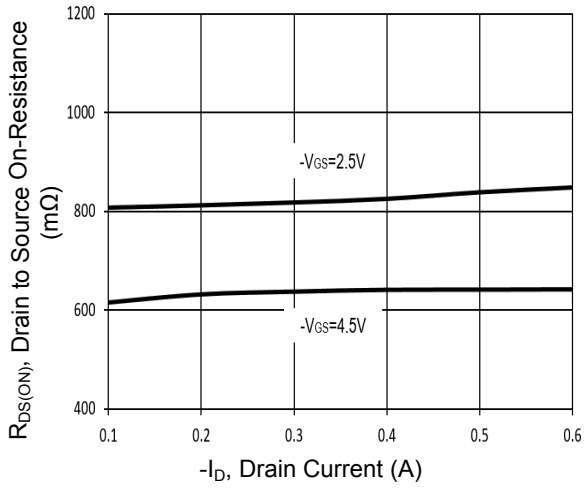


Figure 3. On Resistance vs. Drain Current

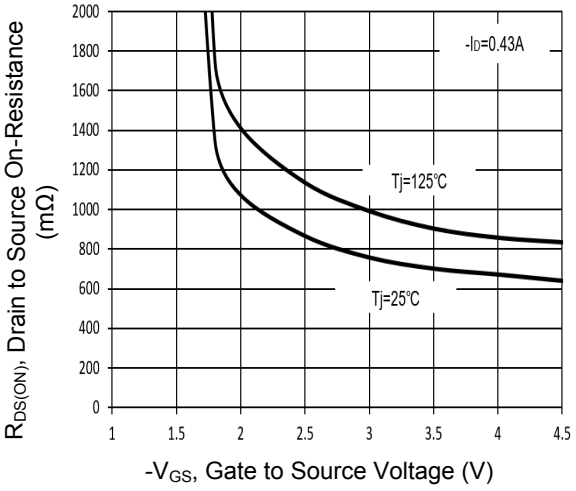


Figure 4. On Resistance vs. Gate Source Voltage

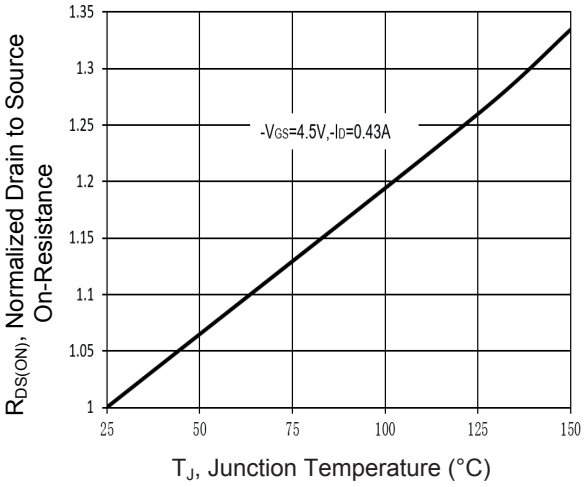


Figure 5. On-Resistance vs. T_J

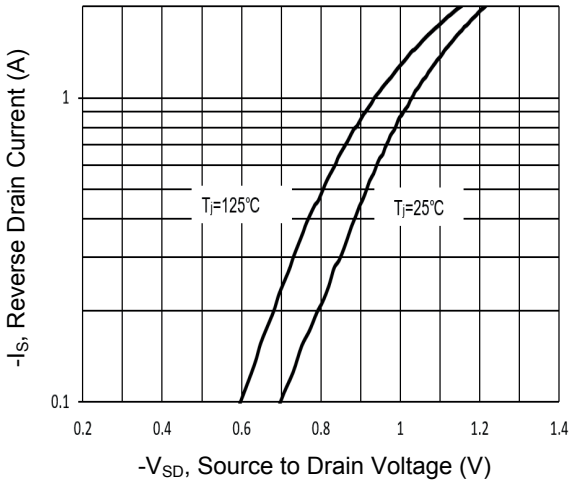


Figure 6. Typical Forward Characteristics

Typical Electrical and Thermal Characteristic Curves

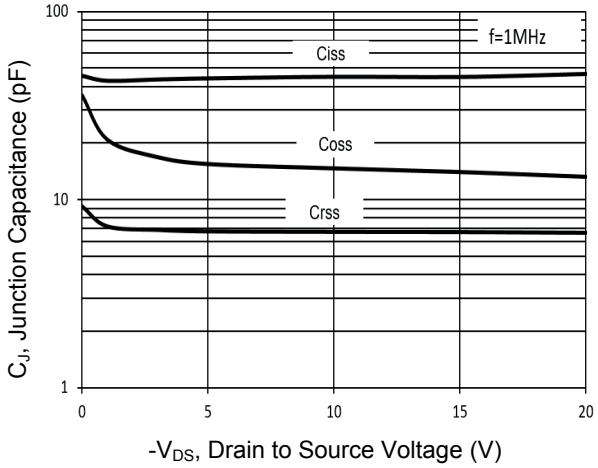


Figure 7. Typical Junction Capacitance

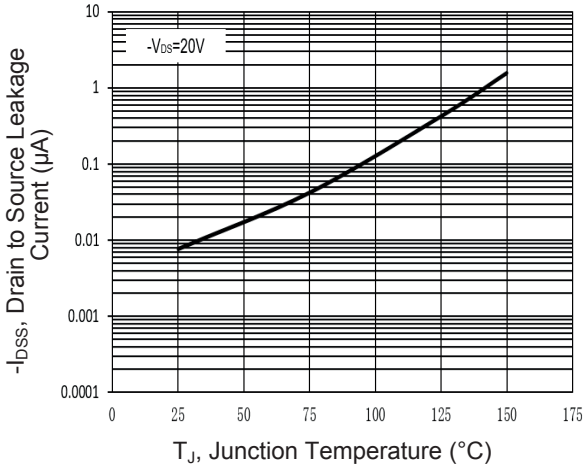


Figure 8. Drain to Source Leakage Current vs. T_J

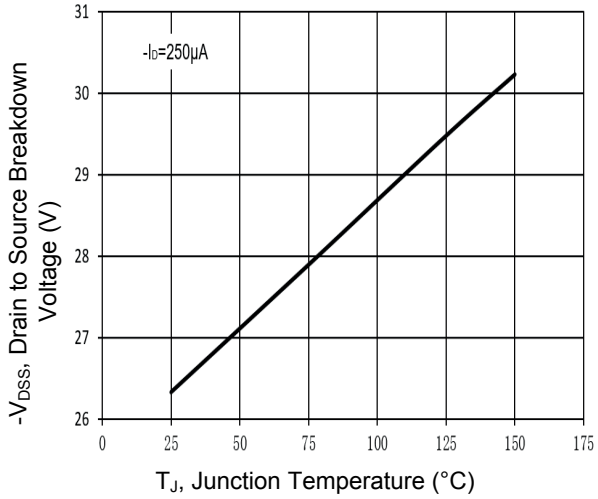


Figure 9. Drain to Source Breakdown Voltage vs. T_J

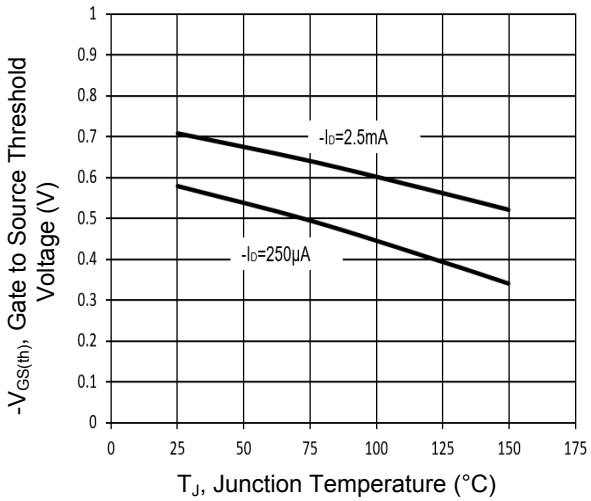


Figure 10. Gate-Source Threshold Voltage vs. T_J

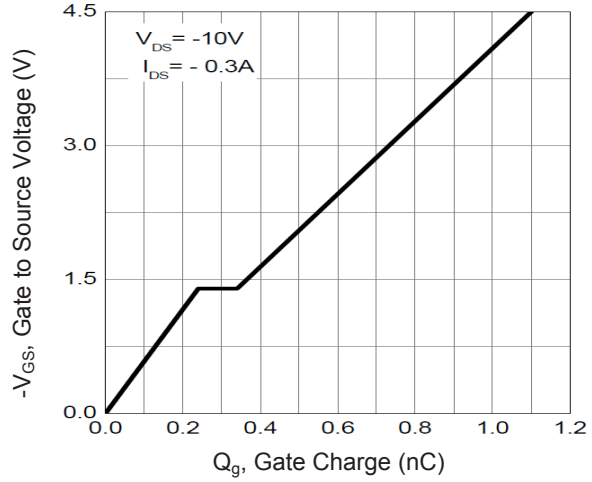
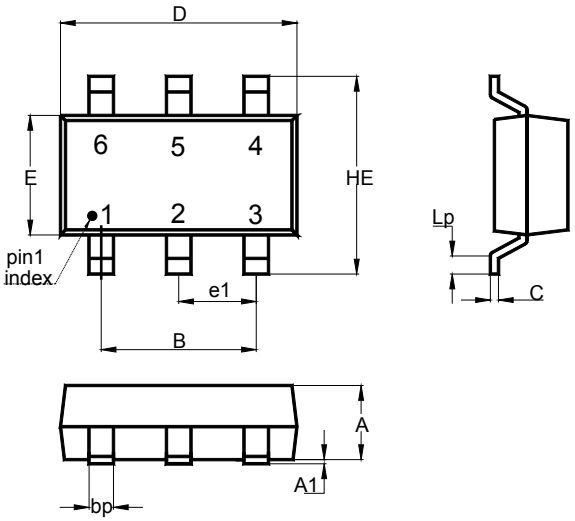


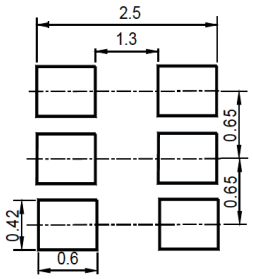
Figure 11. Gate Charge

Package Outline Dimensions (SOT-363)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.00	0.035	0.039
A1	0.00	0.10	0.000	0.004
B	1.30 typ.		0.051 typ.	
C	0.10	0.25	0.004	0.010
D	1.80	2.20	0.071	0.087
E	1.15	1.35	0.045	0.053
e1	0.65 typ.		0.026 typ.	
HE	2.00	2.20	0.079	0.087
Lp	0.15	0.40	0.006	0.016
bp	0.10	0.30	0.004	0.012

Recommended Pad Layout



Unit: mm

Order Information

Device	Package	Marking	Carrier	Quantity
GSFK0201PQ	SOT-363	PQ	Tape & Reel	3,000pcs / Reel