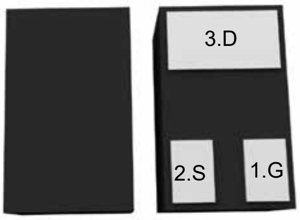
GP72K

N-Channel Enhancement Mode Power MOSFET

Features

- Fast switching
- Low gate charge and $R_{DS(ON)}$
- Low reverse transfer capacitances
- V_{DS}= 60V,I_D= 0.3A
  $R_{DS(on)}$< 3Ω @V_{GS}= 10V

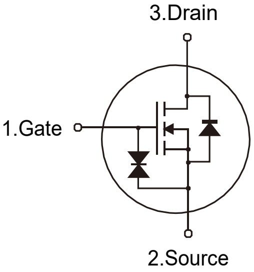
DFN1x0.6-3L



Applications

- Load switch
- PWM application

Schematic Diagram



Absolute Maximum Ratings

Ratings at 25℃ ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	0.3	A
Drain Current-Pulsed Note1	I_{DM}	0.8	A
Maximum Power Dissipation	P_D	0.3	W
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance,Junction-to-Ambient Note2	$R_{\theta JA}$	357	°C/W

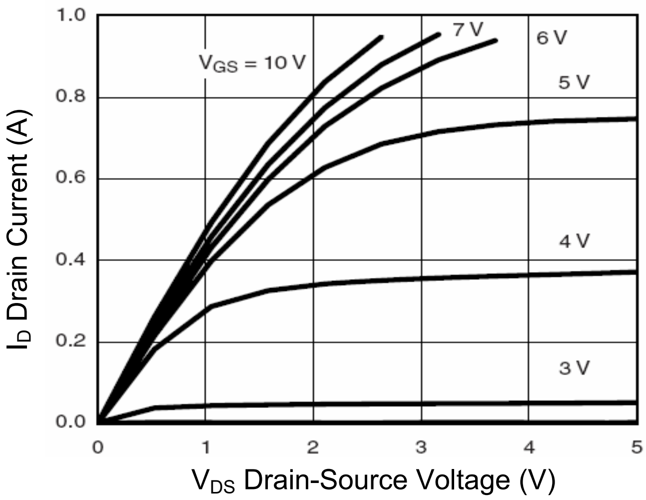
Electrical Characteristics

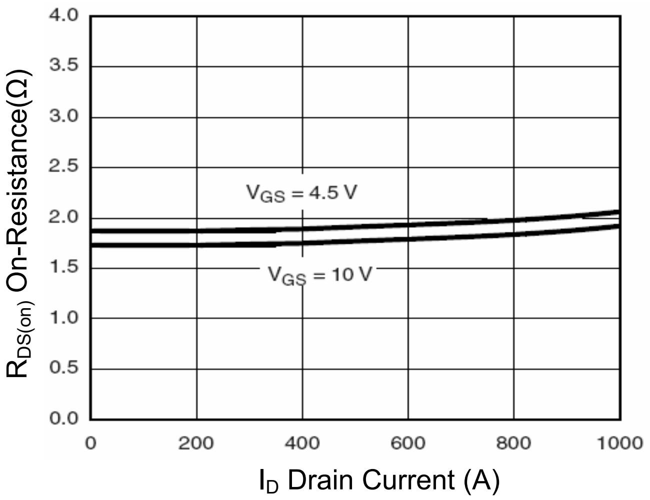
(Ta=25℃ unless otherwise specified)

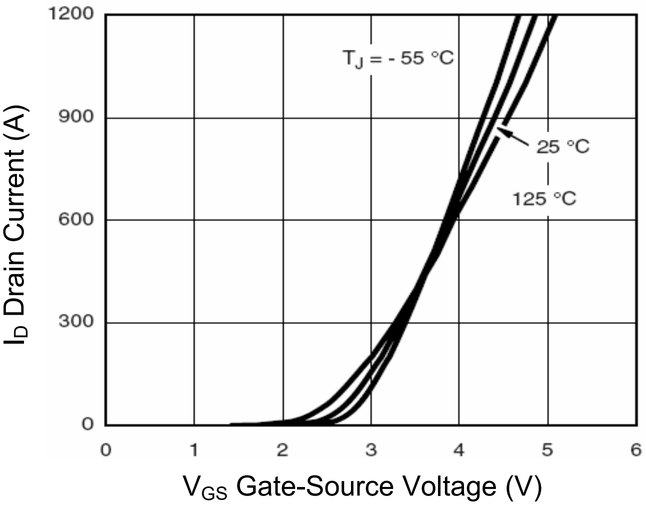
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250μA	60	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V,V_{GS}=0V	--	--	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	--	--	±10	μA
Gate Threshold Voltage Note3	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	1	1.4	2.5	V
Drain-Source On-Resistance Note3	$R_{DS(on)}$	V_{GS}=10V,I_D=0.5A	--	1.9	3	Ω
		V_{GS}=4.5V,I_D=0.3A	--	2.2	4	Ω
Forward Transconductance Note3	g_{FS}	V_{DS}=10V,I_D=0.2A	0.1	--	--	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V,f=1MHz	--	21	--	pF
Output Capacitance	C_{oss}		--	11	--	pF
Reverse Transfer Capacitance	C_{rss}		--	4.2	--	pF
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	V_{DS}=30V, I_D=0.2A V_{GEN}=10V,R_G=10Ω	--	10	--	nS
Turn-on Rise Time	t_r		--	50	--	nS
Turn-off Delay Time	$t_{d(off)}$		--	17	--	nS
Turn-off Fall Time	t_f		--	10	--	nS
Total Gate Charge	Q_g	V_{DS}=10V,I_D=0.3A, V_{GS}=4.5V	--	1.7	--	nC
Source-Drain Diode Characteristics						
Diode Forward Voltage Note3	V_{SD}	V_{GS}=0V,I_S=0.2A	--	--	1.2	V
Diode Forward Current Note2	I_S		--	--	0.3	A

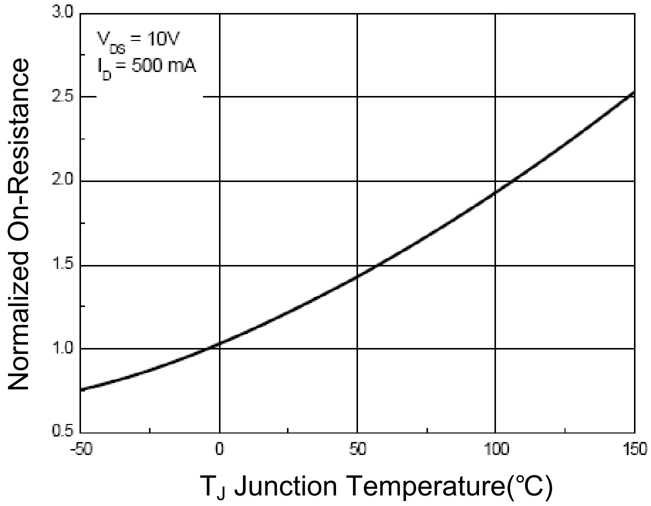
Note:
1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse width≤300μs, duty cycle≤2%.

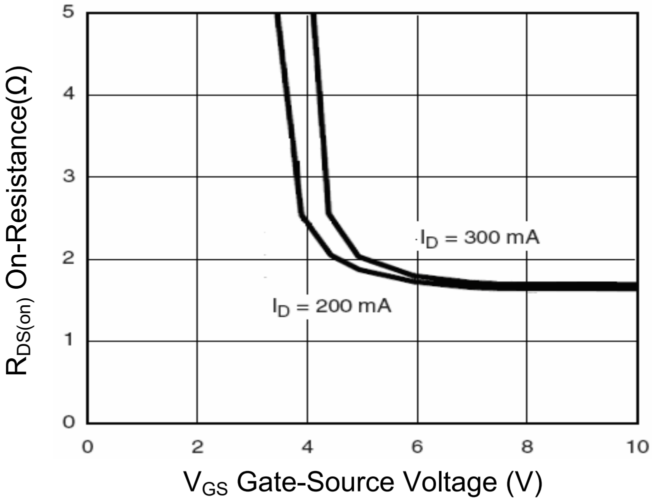
Typical Characteristic Curves

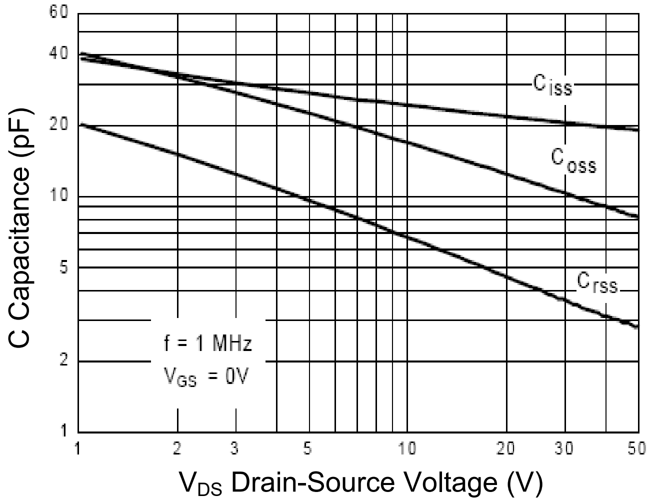


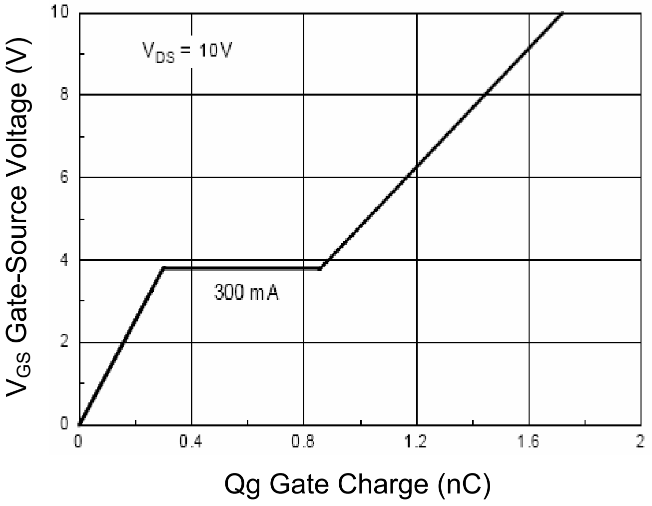


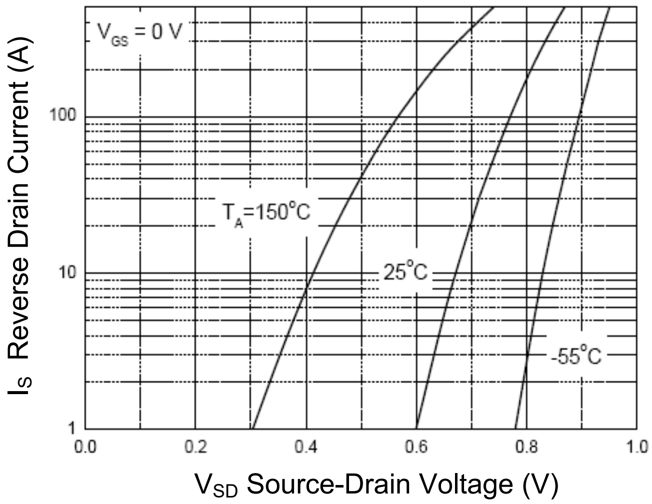


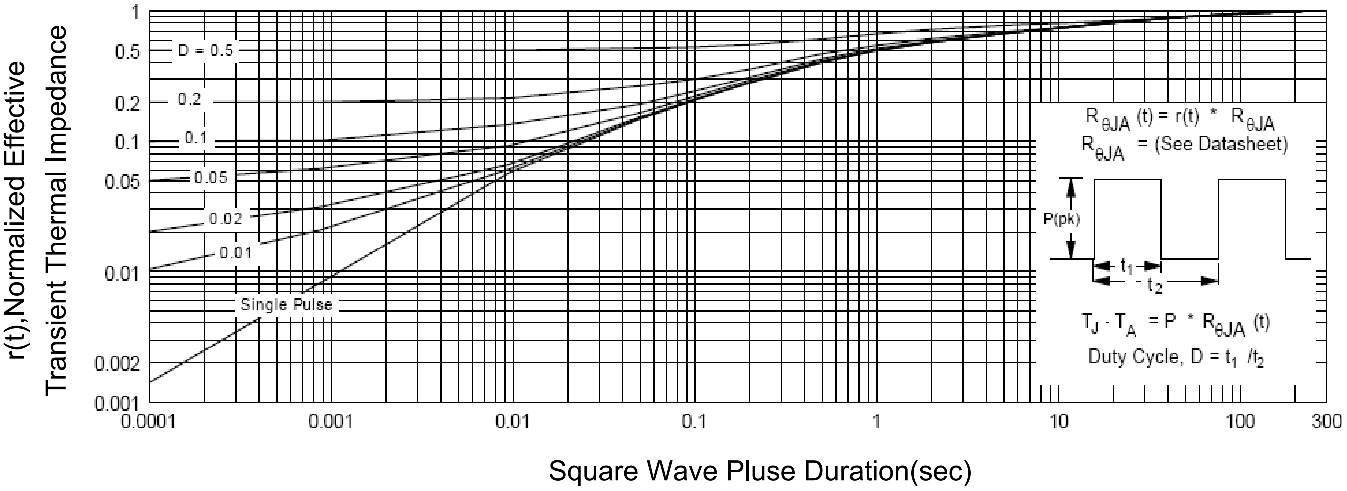







V_{GS} Gate-Source Voltage (V)
Qg Gate Charge (nC)
V_{DS} = 10V
300 mA
0
2
4
6
8
10
0
0.4
0.8
1.2
1.6
2


I_S Reverse Drain Current (A)
V_{SD} Source-Drain Voltage (V)
V_{GS} = 0 V
T_A=150°C
25°C
-55°C
1
10
100
0.0
0.2
0.4
0.6
0.8
1.0


r(t),Normalized Effective
Transient Thermal Impedance
Square Wave Pluse Duration(sec)
D = 0.5
0.2
0.1
0.05
0.02
0.01
Single Pulse
$R_{\theta JA}$ (t) = r(t) * $R_{\theta JA}$
$R_{\theta JA}$ = (See Datasheet)
P(pk)
t_1
t_2
T_J - T_A = P * $R_{\theta JA}$ (t)
Duty Cycle, D = t_1 /t_2
1
0.5
0.2
0.1
0.05
0.01
0.002
0.001
0.0001
0.001
0.01
0.1
1
10
100
300

Package Outline

DFN1x0.6-3L-0009
Dimensions in mm