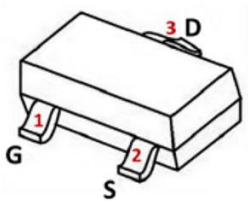
GPK2009

20V P-Channel MOSFET

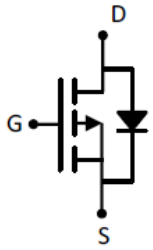
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-20V	18mΩ@-4.5V	-9A
	24mΩ@-2.5V	

SOT-23-3L



Schematic diagram



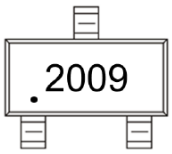
Feature

- Trench Technology Power MOSFET
- Low $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance

Application

- Power Switching Application
- DC/DC Converter
- Uninterruptible power supply
- PD charge

Marking:



ABSOLUTE MAXIMUM RATINGS (T_A = 25℃ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current[1,5]	T_C = 25℃	I_D	-9	A
	T_C = 100℃	I_D	-5.6	A
Pulsed Drain Current[2]		I_{DM}	-36	A
Power Dissipation[4,5]	T_C = 25℃	P_D	1.25	W
Thermal Resistance from Junction to Ambient[5]		$R_{\theta JA}$	278	℃/W
Junction Temperature		T_J	150	℃
Storage Temperature		T_{STG}	-55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS (T_A = 25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -20V, V_{GS} = 0V			-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS} = ±12V, V_{DS} = 0V			±100	nA
On Characteristics[3]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	- 0.5	-0.7	-1.2	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = -4.5V, I_D = -6A		18	24	mΩ
		V_{GS} = -2.5V, I_D = -6A		24	40	
Forward Tranconductance	g_{FS}	V_{DS} = -5V, I_D = -6A	9	17		S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = -10V, V_{GS} = 0V, f = 1MHz		1457		pF
Output Capacitance	C_{oss}			192		
Reverse Transfer Capacitance	C_{rss}			182		
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		8		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} = -15V, V_{GS} = -4.5V, I_D = -6A		21		nC
Gate-Source Charge	Q_{gs}			2.4		
Gate-Drain Charge	Q_{gd}			6.5		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = -10V, V_{GEN} = -4.5V, I_D = -1A R_g = 10Ω		11		ns
Turn-On Rise Time	t_r			35		
Turn-Off Delay Time	$t_{d(off)}$			30		
Turn-Off Fall Time	t_f			10		
Source - Drain Diode Characteristics						
Diode Forward Current	I_S				-9	A
Diode Forward Voltage[3]	V_{SD}	V_{GS} = 0V, I_S = -2A			-1.2	V

Notes :

1.The maximum current rating is limited by package.

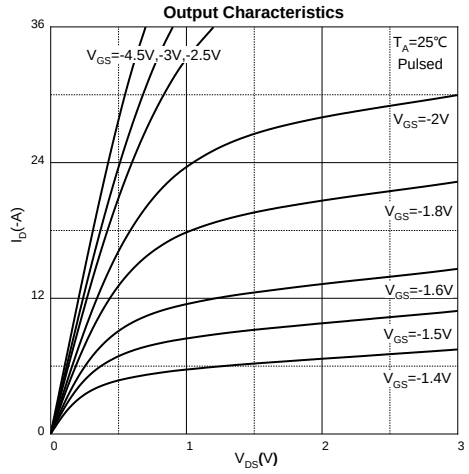
2.Pulse Test : Pulse Width ≤ 10μs, duty cycle ≤ 1%.

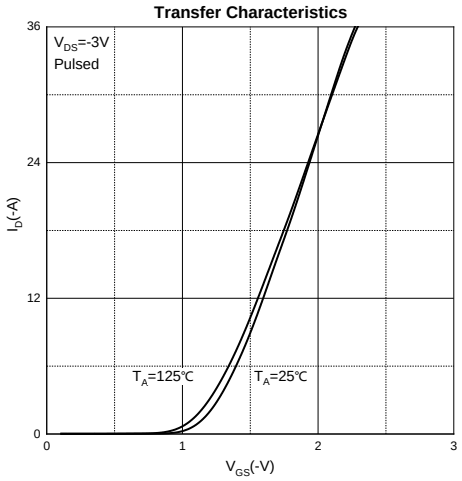
3.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.

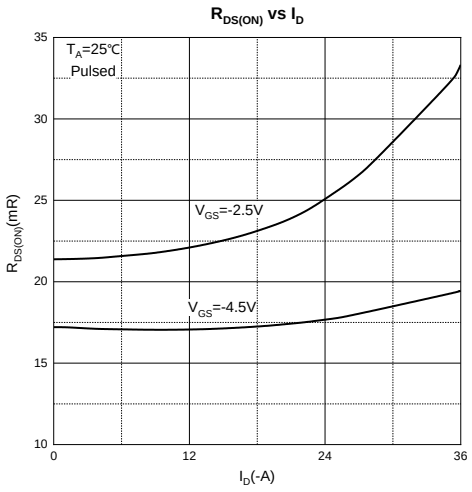
4.The power dissipation PD is limited by TJ(MAX) = 150°C.

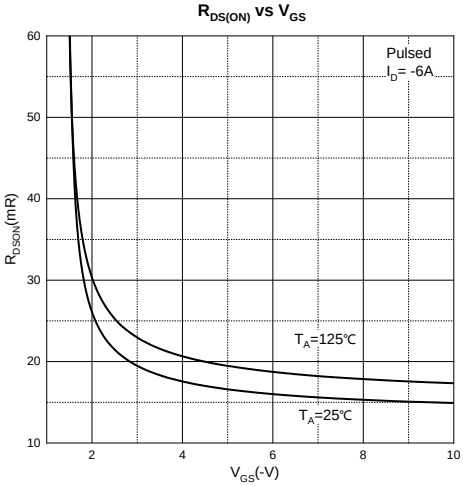
5.Device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

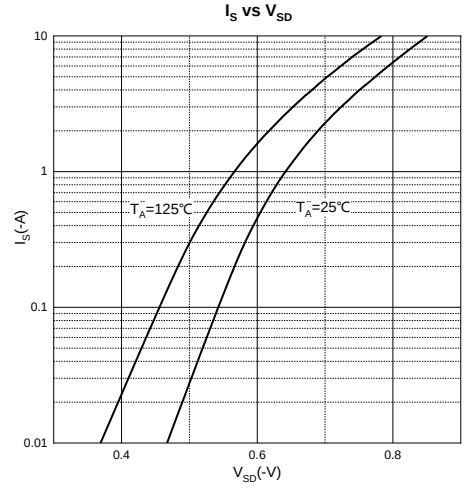
Typical Characteristics

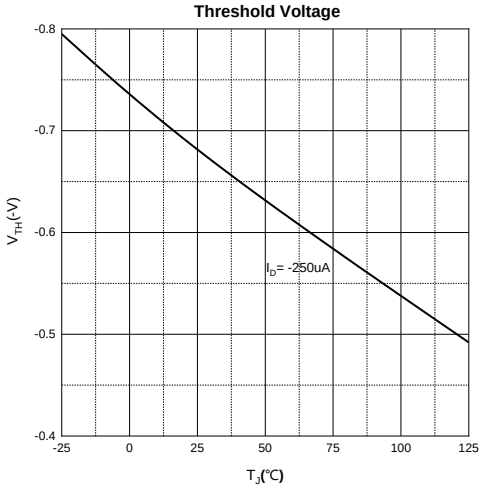




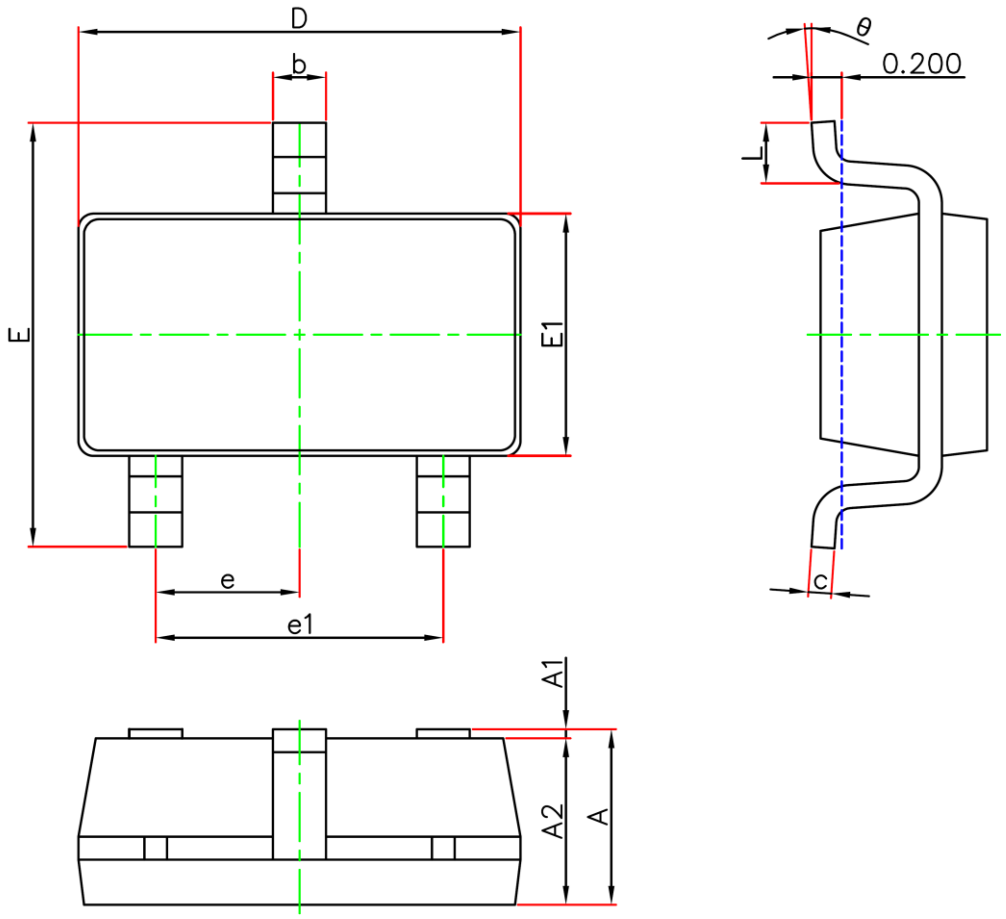








SOT-23-3L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0	0.150	0.000	0.006
A2	1.050	1.250	0.041	0.049
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	2.650	2.950	0.104	0.116
E1	1.500	1.700	0.059	0.067
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

Attention：

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- Any and all semiconductor products have certain probability to fail or malfunction, which may result in personal injury, death or property damage. Customer are solely responsible for providing adequate safe measures when design their systems.
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