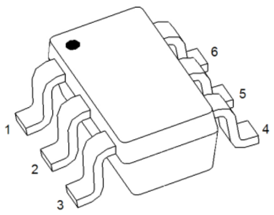
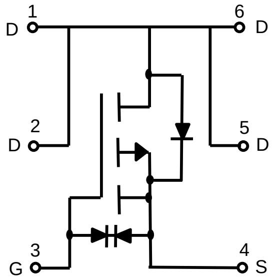
-20V/-4A P-Channel MOSFET

Product Summary

BVDSS	-20.0	V
ID	-4.0	A
RDSON@VGS=-4.5V	33.0	mΩ
RDSON@VGS=-2.5V	45.0	mΩ
RDSON@VGS=-1.8V	64.0	mΩ

SOT-23-6L





Schematic diagram

Feature

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

Application

- Load Switch
- DC/DC Converter

Ordering Information:

Product	Package	Marking	Packing
M02P04DG	SOT23-6L	R15	3000PCS/Reel

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}	±10	V
Continuous Drain Current[1,5]	T_A = 25℃	I_D	-4	A
Pulsed Drain Current[2]		I_{DM}	-16	A
Power Dissipation[4,5]	T_A = 25℃	P_D	1.2	W
Thermal Resistance from Junction to Ambient[5]		$R_{\theta JA}$	104	℃/W
Junction Temperature		T_J	150	℃
Storage Temperature		T_{STG}	-55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS (T_J = 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} = -16V, V_{GS} = 0V			-1	μA
Gate - Body Leakage Current	I_{GSS}	V_{GS} = ±10V, V_{DS} = 0V			±10	μA
On Characteristics[3]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-0.4	-0.65	-1.0	V
Drain-source On-resistance	$R_{DS(on)}$	V_{GS} = -4.5V, I_D = -4A		33	50	mΩ
		V_{GS} = -2.5V, I_D = -4A		45	60	
		V_{GS} = -1.8V, I_D = -4A		63	100	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = -10V, V_{GS} = 0V, f = 1MHz		794		pF
Output Capacitance	C_{oss}			139		
Reverse Transfer Capacitance	C_{rss}			124		
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		4.8		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} = -20V, V_{GS} = -4.5V, I_D = -2A		11.4		nC
Gate-source Charge	Q_{gs}			1.0		
Gate-drain Charge	Q_{gd}			4.6		
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = -10V, V_{GS} = -4.5V, R_L= 2.5 Ω, R_G = 3Ω		10		ns
Turn-on Rise Time	t_r			17		
Turn-off Delay Ttime	$t_{d(off)}$			94		
Turn-off Fall Time	t_f			35		
Source - Drain Diode Characteristics						
Diode Forward Voltage[3]	V_{SD}	V_{GS} = 0V, I_S = -4A			-1.2	V

Notes :

1.The maximum current rating is limited by package.

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

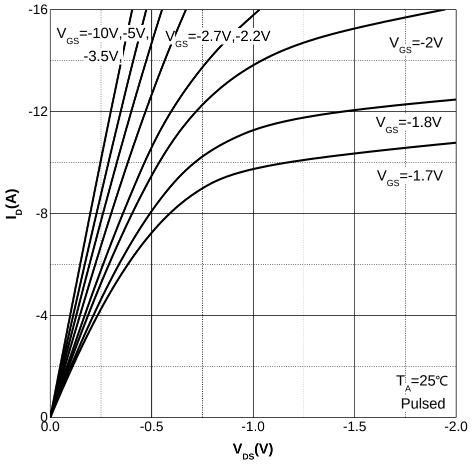
3.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.

4.The power dissipation P_D is limited by $T_{J(MAX)}$ = 150°C.

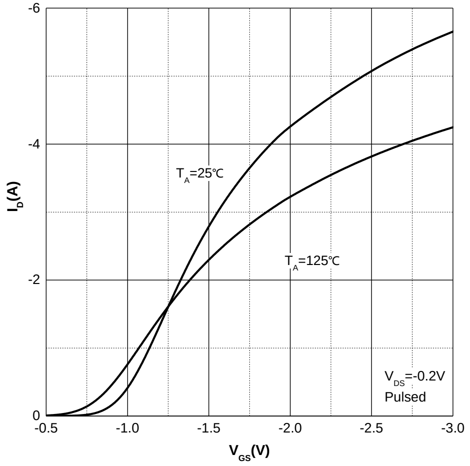
5.Device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

Typical Characteristics

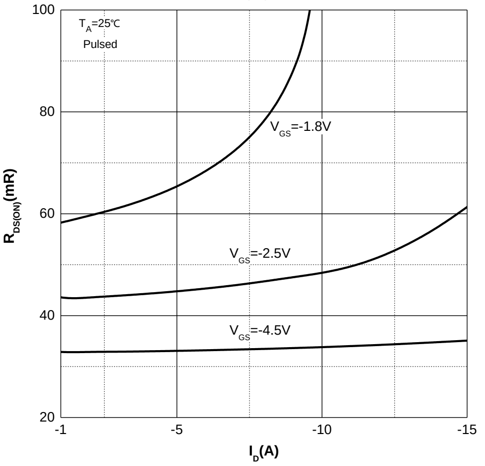
Output Characteristics



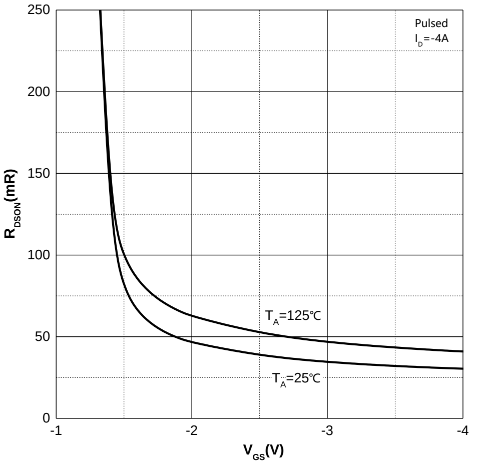
Transfer Characteristics



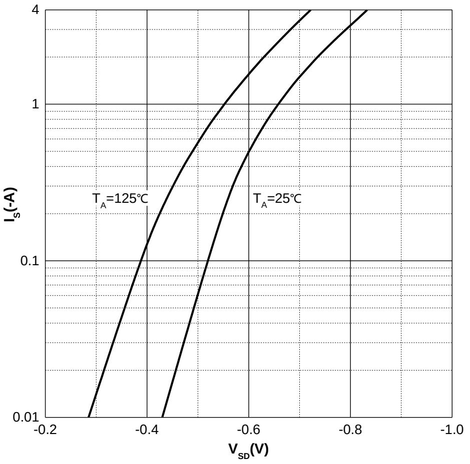
$R_{DS(ON)}$ vs I_D



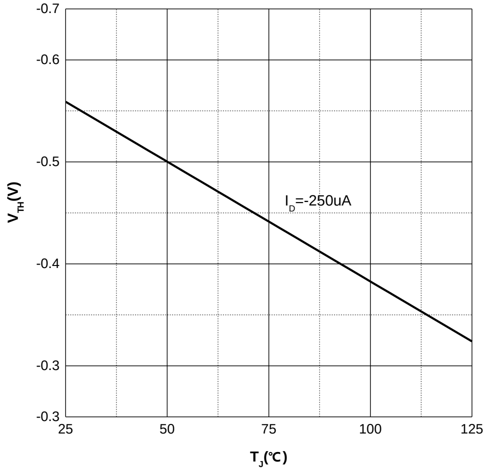
$R_{DS(ON)}$ vs V_{GS}



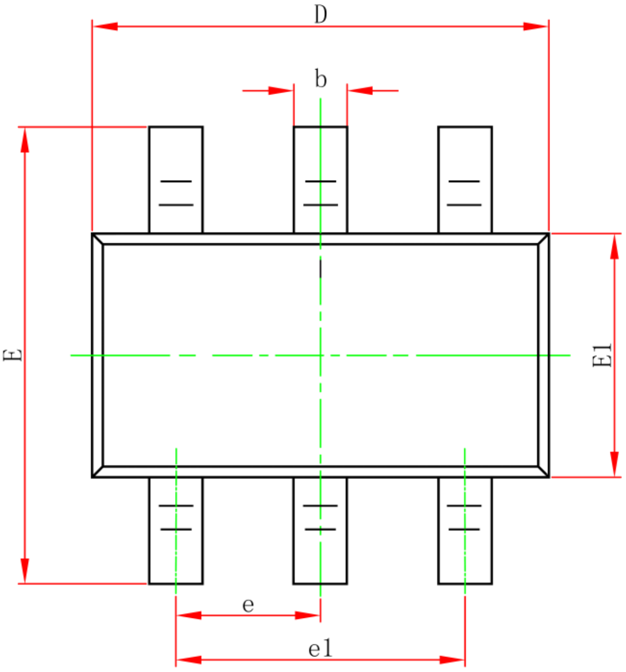
I_S vs V_{SD}

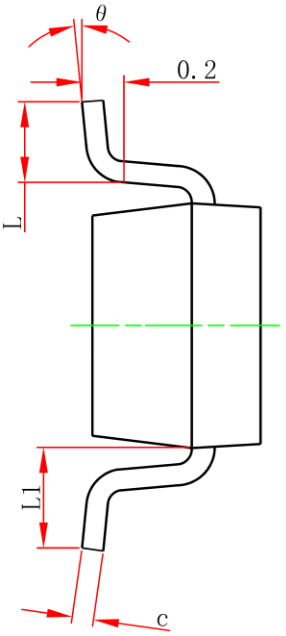


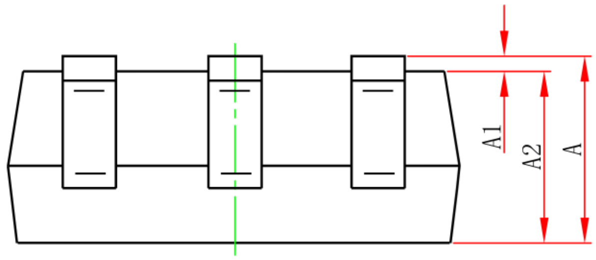
Threshold Voltage



SOT-23-6L 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
L1	0.600REF		0.024REF	
θ	0°	8°	0°	8°