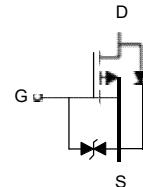
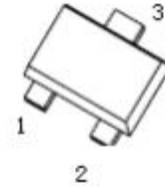


-20V/-0.66A P-Channel MOSFET
Product Summary

BVDSS	-20	V
ID	-0.66	A
RDSON@VGS=-4.5V	530	mΩ
RDSON@VGS=-2.5V	750	mΩ

SOT-523


- 1.Gate
- 2.Source
- 3.Dra

Feature

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

Application

- Load Switching
- Low Current Inverters
- Low Current DC/DC Converters

Ordering Information:

Product	Package	Marking	Packing
M3139KA	SOT-523	39K	3000PCS/Reel

Maximum ratings ($T_a=25^{\circ}\text{C}$ 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}	I_D	-0.66	A
Pulsed Drain Current ²	I_{DM}	-2.0	A
Power Dissipation ^{4,5}	P_D	0.2	W
Thermal Resistance from Junction to Ambient ⁵	$R_{\theta JA}$	625	$^{\circ}\text{C/W}$
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55~ +150	$^{\circ}\text{C}$

-20V/-0.66A P-Channel MOSFET
MOSFET ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

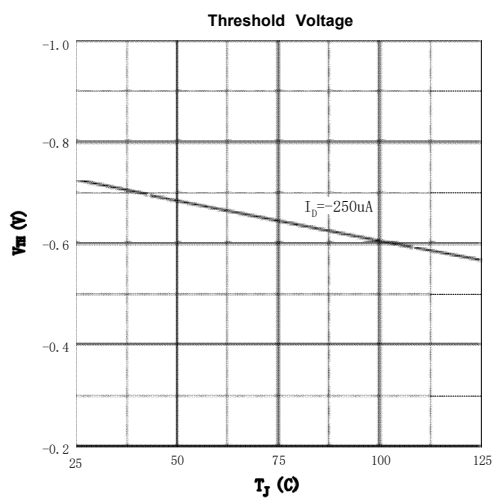
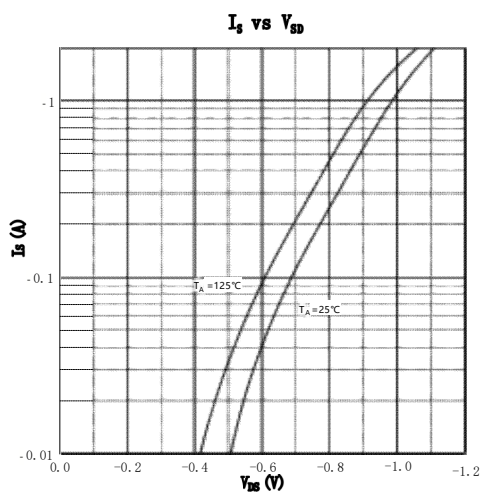
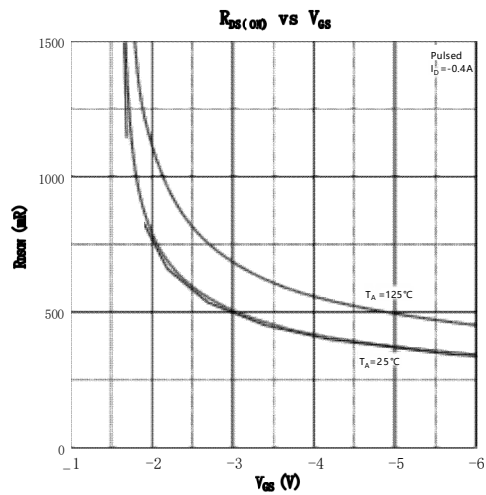
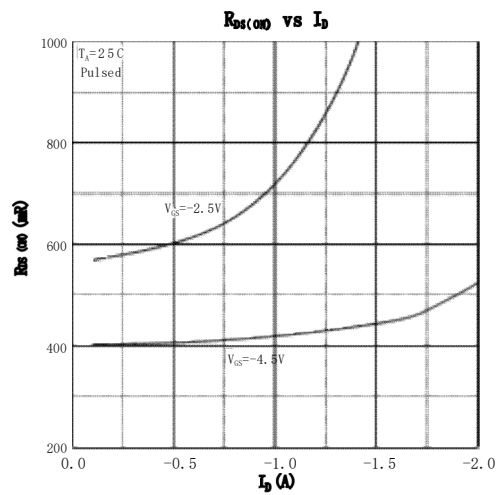
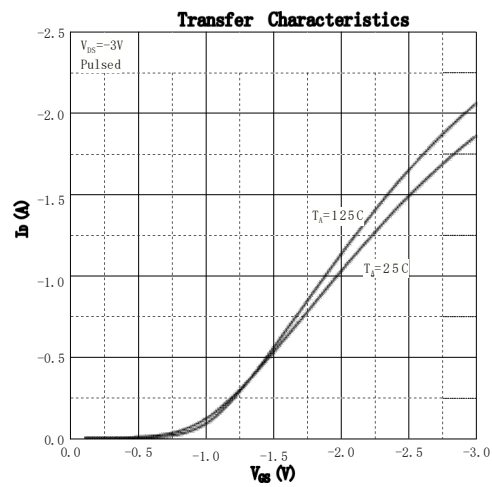
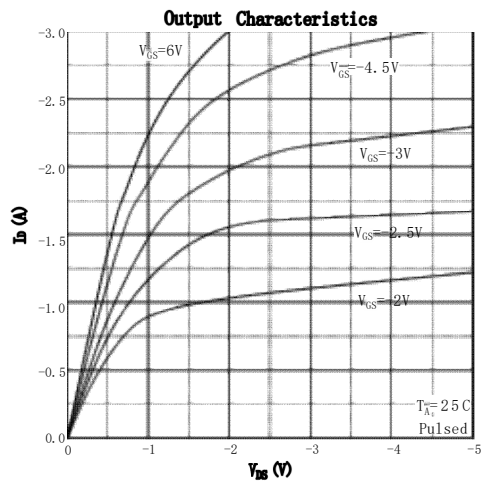
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-20			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -16V, V_{GS} = 0V$			-1	μA
Gate - Body Leakage Current	I_{GSS}	$V_{GS} = \pm 10V, V_{DS} = 0V$			± 10	μA
On Characteristics ³						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.4	-0.7	-1.0	V
Drain-source On-resistance	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -0.5A$		530	790	m Ω
		$V_{GS} = -2.5V, I_D = -0.3A$		750	1000	
		$V_{GS} = -1.8V, I_D = -0.12A$		1100	1700	
Forward Transconductance	g_{FS}	$V_{DS} = -5V, I_D = -0.4A$		1		S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = -10V, V_{GS} = 0V, f = 1MHz$		79		pF
Output Capacitance	C_{oss}			15		
Reverse Transfer Capacitance	C_{rss}			13		
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS} = -10V, V_{GS} = -4.5V, I_D = -0.2A$		2.26		nC
Gate-source Charge	Q_{gs}			0.45		
Gate-drain Charge	Q_{gd}			0.24		
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = -10V, V_{GS} = -4.5V,$ $R_L = 50\Omega, R_G = 3\Omega$		8		ns
Turn-on Rise Time	t_r			5.5		
Turn-off Delay Ttime	$t_{d(off)}$			30		
Turn-off Fall Time	t_f			17		
Source - Drain Diode Characteristics						
Diode Forward Voltage ³	V_{SD}	$V_{GS} = 0V, I_S = -0.5A$			1.2	V

Notes :

- 1.The maximum current rating is limited by package.
- 2.Repetitive rating:pulse width limited by $T_{J(MAX)} = 150^\circ\text{C}$.
- 3.Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- 4.The power dissipation P_D is limited by $T_{J(MAX)} = 150^\circ\text{C}$.
- 5.Device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$.

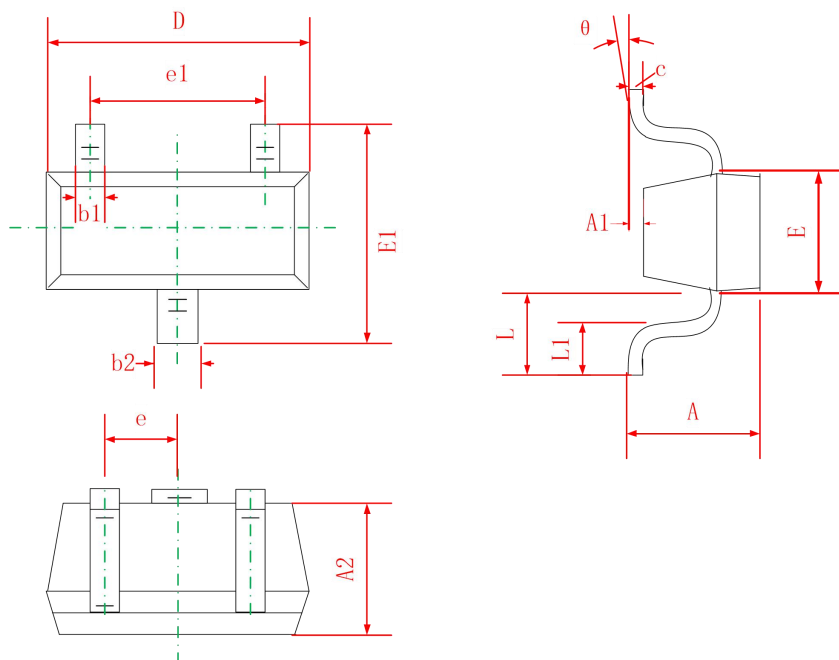
-20V/-0.66A P-Channel MOSFET

Typical Characteristics



-20V/-0.66A P-Channel MOSFET

SOT-523 Package Information



Symbol	Dimensions In Millimeters	
	Min	Max
A	0.700	0.900
A1	0.000	0.100
A2	0.700	0.800
b1	0.150	0.250
b2	0.250	0.350
C	0.100	0.200
D	1.500	1.700
E	0.700	0.900
E1	1.450	1.750
e	0.500 TYP	
e1	0.900	1.100
L	0.400 REF	
L1	0.260	0.460
θ	0°	8°

SOT-523 Suggested Pad Layout

