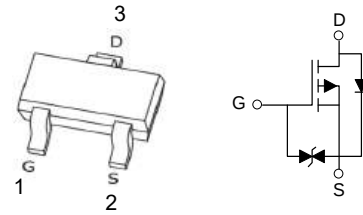


-20V/-0.66A P-Channel MOSFET
Product Summary

BVDSS	-20.0	V
ID	-0.66	A
RDSON@VGS=4.5V	530.0	mΩ
RDSON@VGS=2.5V	750.0	mΩ
RDSON@VGS=1.8V	1000.0	mΩ


SOT23
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

Order Information

Product	Package	Marking	Reel
M3139KD	SOT23	39K	3000PCS

ABSOLUTE 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	0.25	W
Thermal Resistance from Junction to Ambient ⁵	$R_{\theta JA}$	500	$^\circ\text{C/W}$
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)

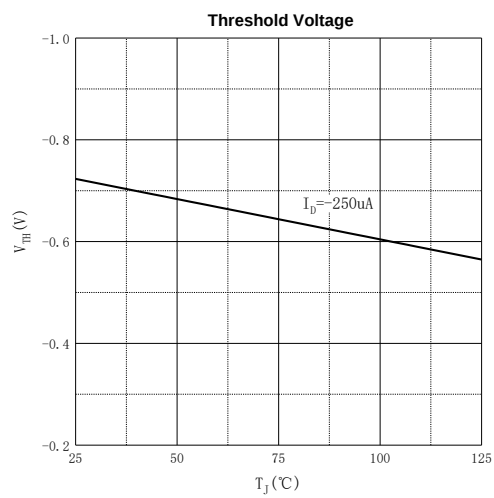
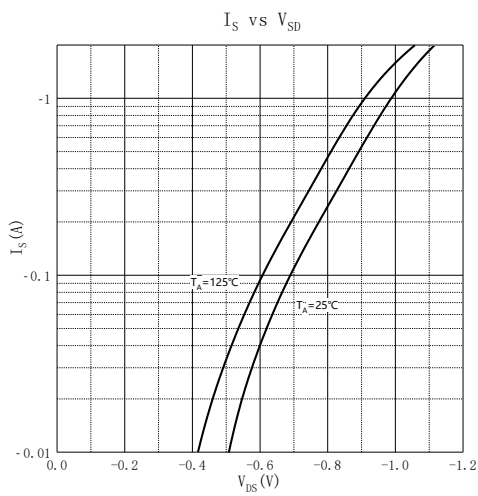
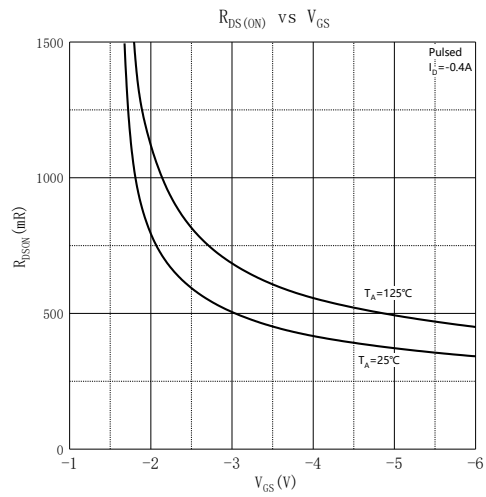
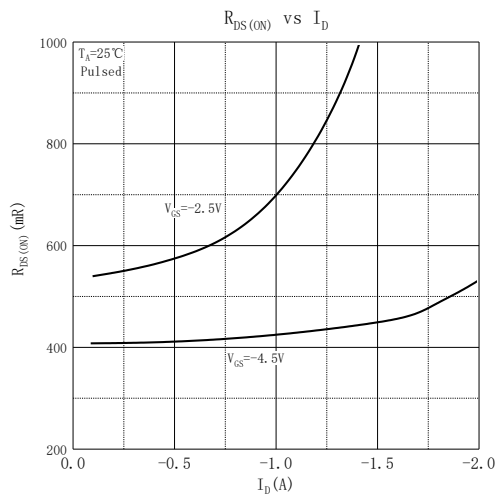
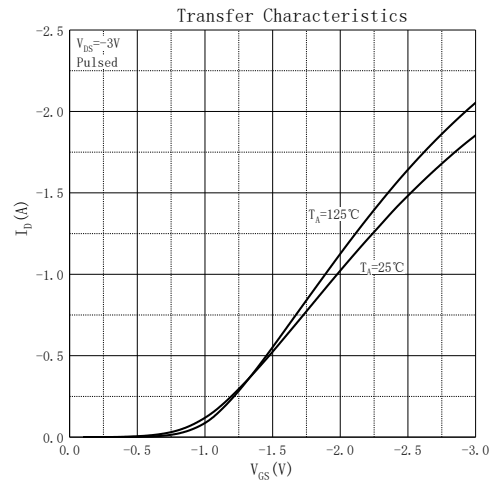
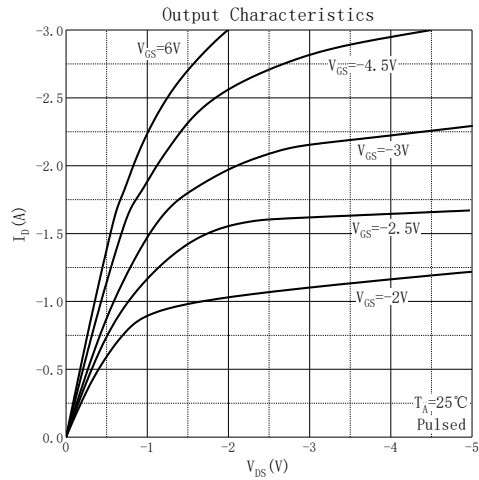
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -16V, V _{GS} = 0V			-1.0	μA
Gate - Body Leakage Current	I _{GSS}	V _{GS} = ±10V, V _{DS} = 0V			±10	μA
On Characteristics ³						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-0.4	-0.7	-1.0	V
Drain-source On-resistance	R _{DS(on)}	V _{GS} = -4.5V, I _D = -0.5A		530	790	mΩ
		V _{GS} = -2.5V, I _D = -0.3A		750	1000	
		V _{GS} = -1.8V, I _D = -0.12A		1000	1600	
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 = 50Ω, R _G = 3Ω		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 $T_A = 25^\circ\text{C}$.

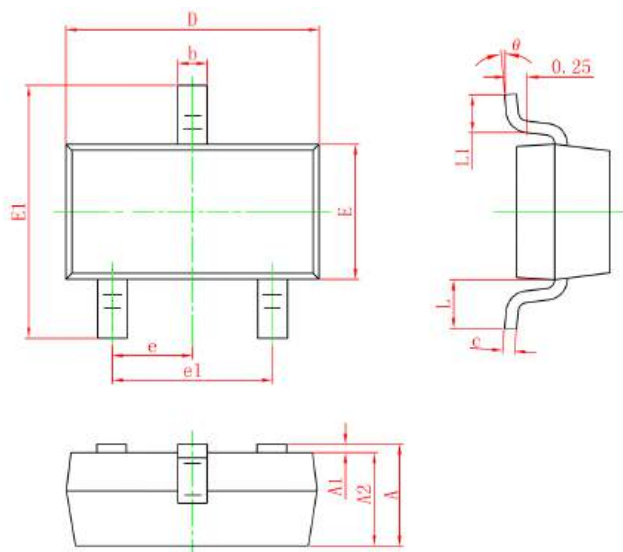
-20V/-0.66A P-Channel MOSFET

Typical Characteristics



-20V/-0.66A P-Channel MOSFET

SOT-23 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0	0.100	0	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.150	1.500	0.045	0.059
E1	2.250	2.650	0.089	0.104
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.550REF		0.022REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout

