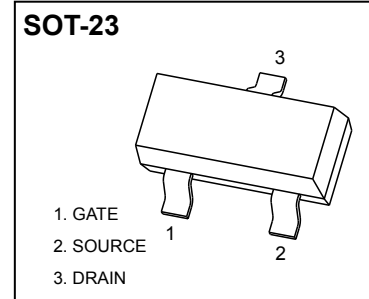




SOT-23 Plastic-Encapsulate MOSFET

5N04 N-Channel MOSFET

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
40V	35 mΩ@10V	5A
	50 mΩ@4.5V	
	60 mΩ@2.5V	



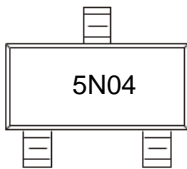
FEATURE

- TrenchFET Power MOSFET
- Low $R_{DS(ON)}$
- Typical ESD Protection

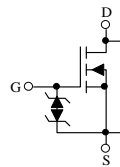
APPLICATION

- Ideal for Load Swith and Battery Protection Applications

MARKING



Equivalent Circuit



ABSOLUTE MAXIMUM RATINGS ($T_a=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	5	A
Pulsed Drain Current	I_{DM}^*	20	A
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	417	$^{\circ}C/W$
Junction Temperature	T_J	150	$^{\circ}C$
Storage Temperature	T_{STG}	-55~+150	$^{\circ}C$
Lead Temperature for Soldering Purposes(1/8" from case for 10 s)	T_L	260	$^{\circ}C$

*Repetitive rating: Pluse width limited by junction temperature.

MOSFET ELECTRICAL CHARACTERISTICS

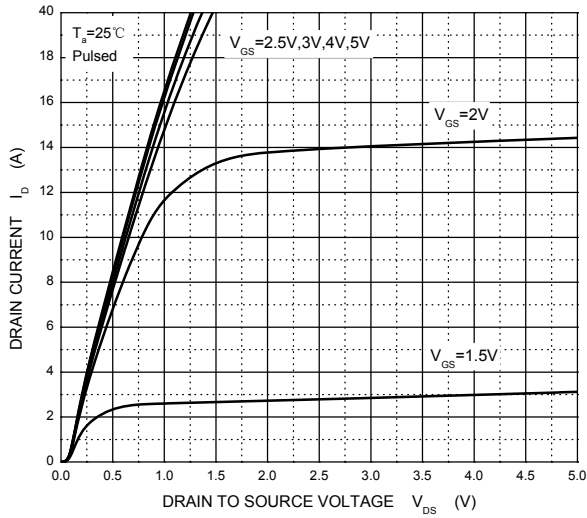
$T_a=25\text{ }^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	40			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 40V, V_{GS} = 0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
Gate threshold voltage(note 1)	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0		2.5V	V
Drain-source on-resistance (note 1)	$R_{DS(on)}$	$V_{GS} = 20V, I_D = 5A$		35	42	m Ω
		$V_{GS} = 4.5V, I_D = 5A$		48	72	m Ω
		$V_{GS} = 2.5V, I_D = 5A$		60	80	m Ω
Forward tranconductance (note 1)	g_{FS}	$V_{DS} = 5V, I_D = 4A$		15		S
Diode forward voltage (note 1)	V_{SD}	$I_S = 1A, V_{GS} = 0V$			1	V
DYNAMIC PARAMETERS (note2)						
Input Capacitance	C_{iss}	$V_{DS} = 15V, V_{GS} = 0V, f = 1MHz$		245		pF
Output Capacitance	C_{oss}			35		pF
Reverse Transfer Capacitance	C_{rss}			20		pF
SWITCHING PARAMETERS (note 2)						
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 15V, V_{GS} = 10V$ $R_L = 3.75\Omega, R_{GEN} = 3\Omega$		2		ns
Turn-on rise time	t_r			3.5		ns
Turn-off delay time	$t_{d(off)}$			22		ns
Turn-off fall time	t_f			3.5		ns
Total Gate Charge	Q_g	$V_{DS} = 15V, V_{GS} = 10V, I_D = 4A$			10	nC
Gate-Source Charge	Q_{gs}			0.5		nC
Gate-Drain Charge	Q_{gd}			1		nC

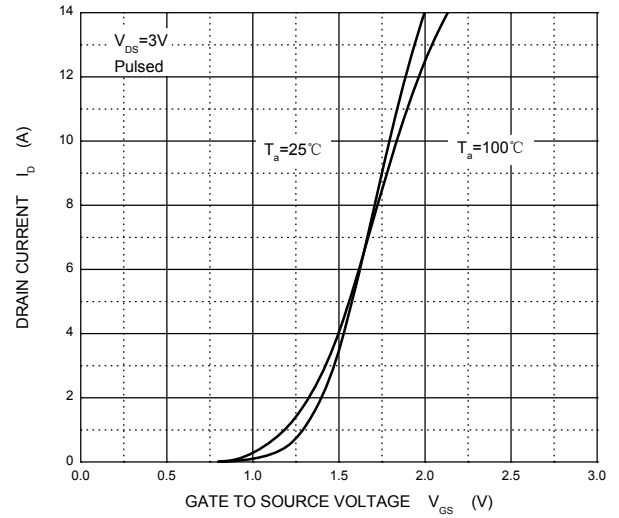
- Notes :**
1. Pulse Test : Pulse width $\leq 300\mu s$, duty cycle $\leq 0.5\%$.
 2. Guaranteed by design, not subject to production testing.

Typical Characteristics

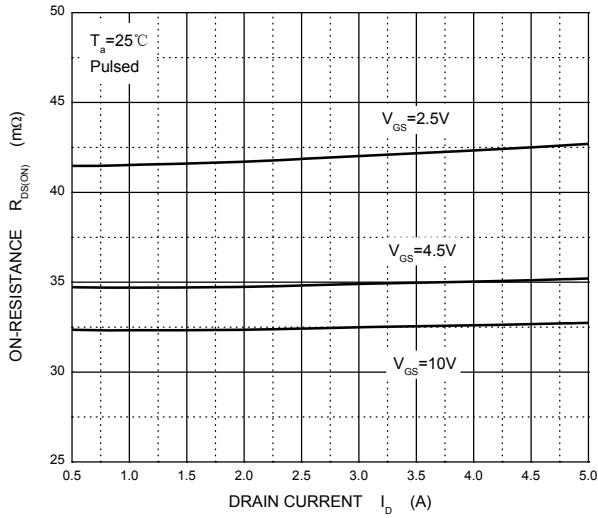
Output Characteristics



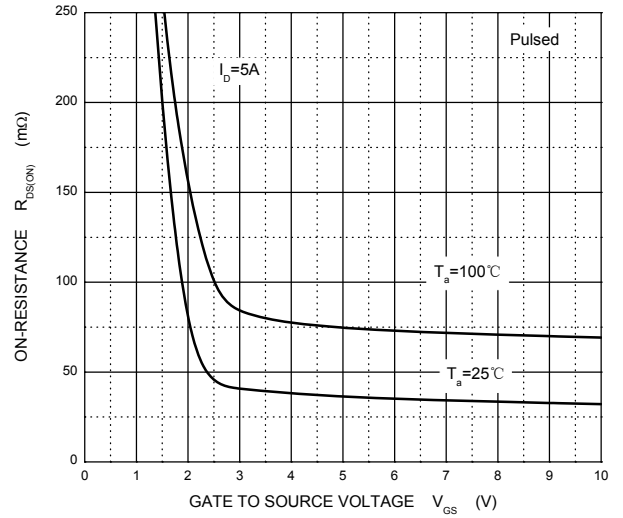
Transfer Characteristics



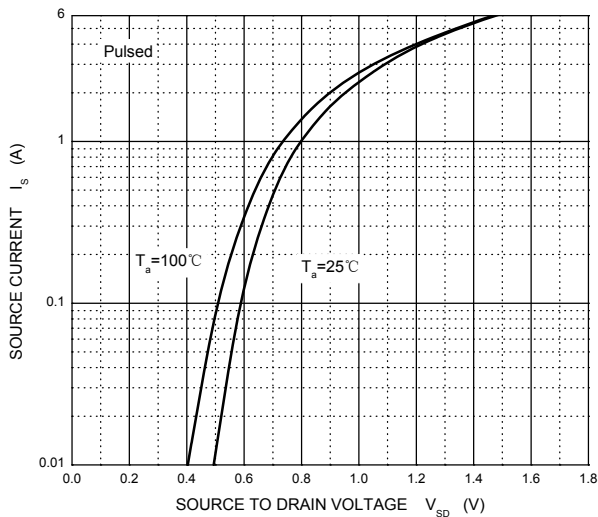
$R_{DS(ON)}$ — I_D



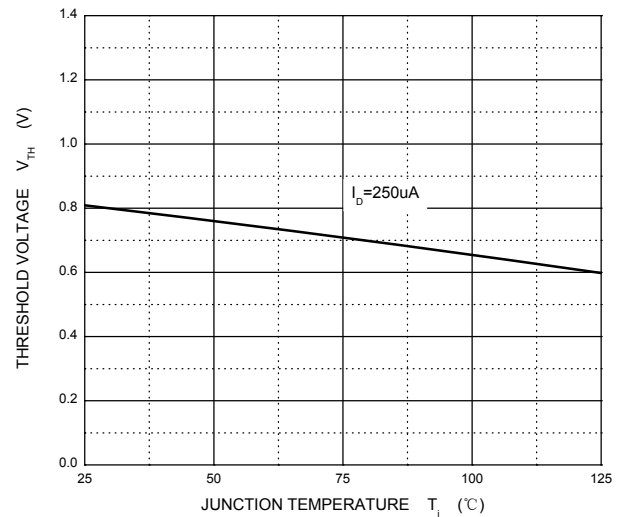
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



Threshold Voltage



SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	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	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.05 mm.
3. The pad layout is for reference purposes only.

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