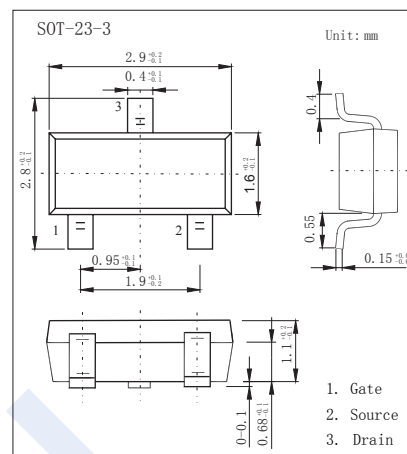


N-Channel MOSFET

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■ Features

- $V_{DS} (V) = 50V$
- $I_D = 500 \text{ mA}$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 1.6 \Omega$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 2.5 \Omega$ ($V_{GS} = 4.5V$)
- $R_{DS(ON)} < 4.5 \Omega$ ($V_{GS} = 2.5V$)
- ESD Protected 1.5KV HBM



■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	50	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current	I_D	500	mA
Pulsed Drain Current	I_{DM}	1200	
Power Dissipation $T_a = 25^\circ\text{C}$ Derate above 25°C	P_D	500	mW
		4	mW/ $^\circ\text{C}$
Thermal Resistance, Junction- to-Ambient	R_{thJA}	250	$^\circ\text{C}/\text{W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to 150	

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■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{DSS}	I _D =250 μA, V _{GS} =0V	50			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =50V, V _{GS} =0V			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±10	uA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250 μA	0.8		1.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =500mA			1.6	Ω
		V _{GS} =4.5V, I _D =200mA			2.5	
		V _{GS} =2.5V, I _D =100mA			4.5	
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =2.5V, f=1MHz		40.6	48	pF
Output Capacitance	C _{oss}			2.5	9	
Reverse Transfer Capacitance	C _{rss}			2.7	5	
Total Gate Charge	Q _g	V _{GS} =4.5V, V _{DS} =25V, I _D =250mA		0.6	1	nC
Gate Source Charge	Q _{gs}			0.18		
Gate Drain Charge	Q _{gd}			0.21		
Turn-On DelayTime	t _{d(on)}	V _{GS} =10V, V _{DS} =25V, I _D =500mA, R _G =6 Ω (Note.1 & 2)		2.1	4.8	ns
Turn-On Rise Time	t _r			18.2	36	
Turn-Off DelayTime	t _{d(off)}			6	11	
Turn-Off Fall Time	t _f			21	48	
Maximum Body-Diode Continuous Current	I _S				500	mA
Diode Forward Voltage	V _{SD}	I _S =500mA, V _{GS} =0V		0.86	1.5	V

Note.1: Pulse width ≤ 300us, Duty cycle ≤ 2%

Note.2: Essentially independent of operating temperature typical characteristics.

■ Marking

Marking	8K3
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■ Typical Characteristics

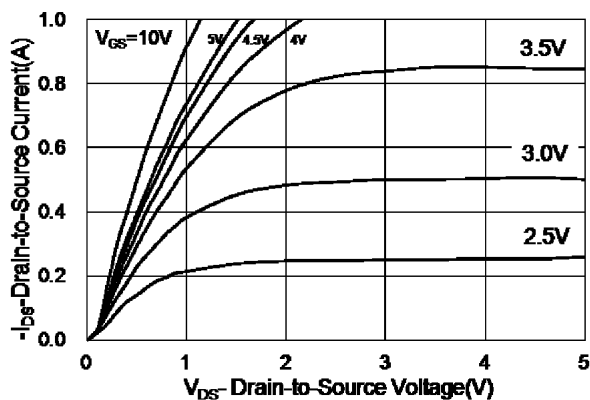


Fig.1 On-Region Characteristics

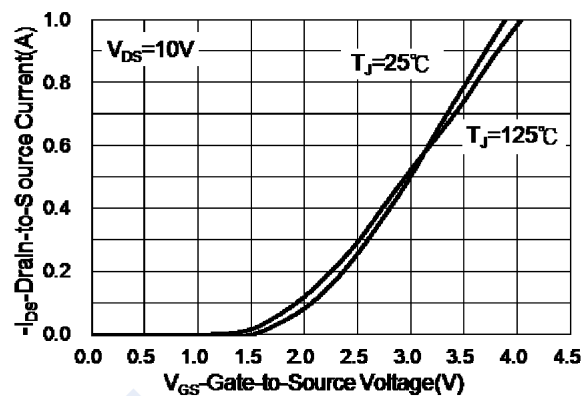


Fig.2 Transfer Characteristics

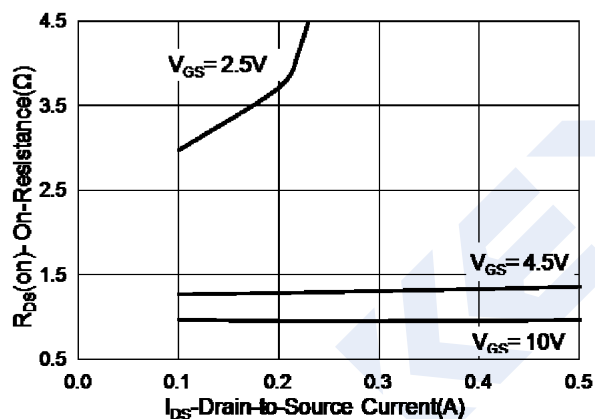


Fig.3 On-Resistance vs. Drain Current

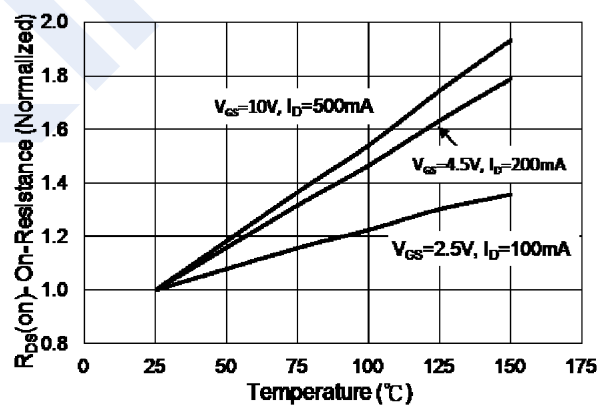


Fig.4 On-Resistance vs. Junction temperature

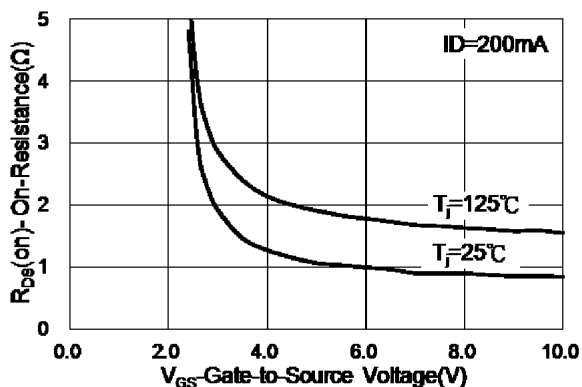


Fig.5 On-Resistance Variation with VGS.

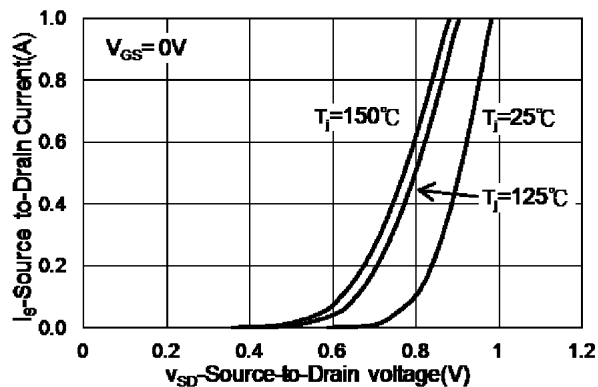


Fig.6 Body Diode Characteristics

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■ Typical Characteristics

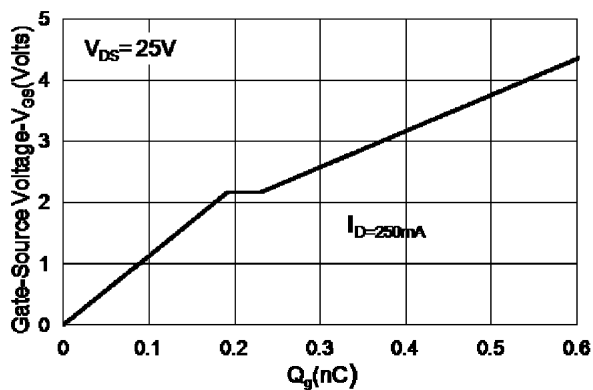


Fig.7 Gate-Charge Characteristics

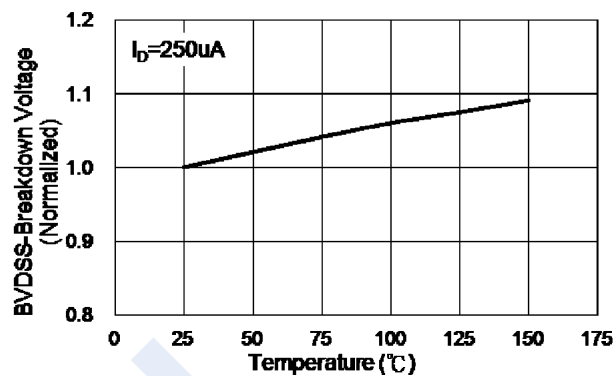


Fig.8 Breakdown Voltage Variation vs. Temperature

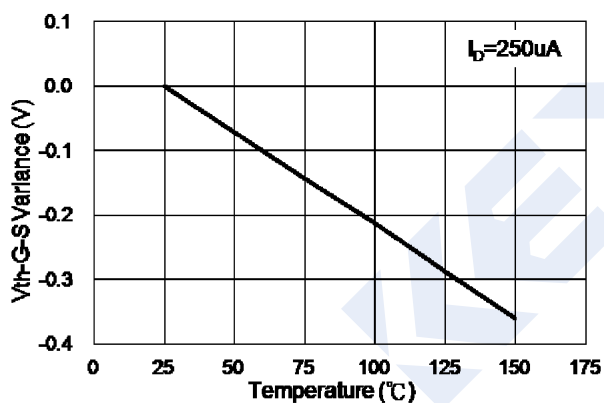


Fig.9 Threshold Voltage Variation with Temperature.