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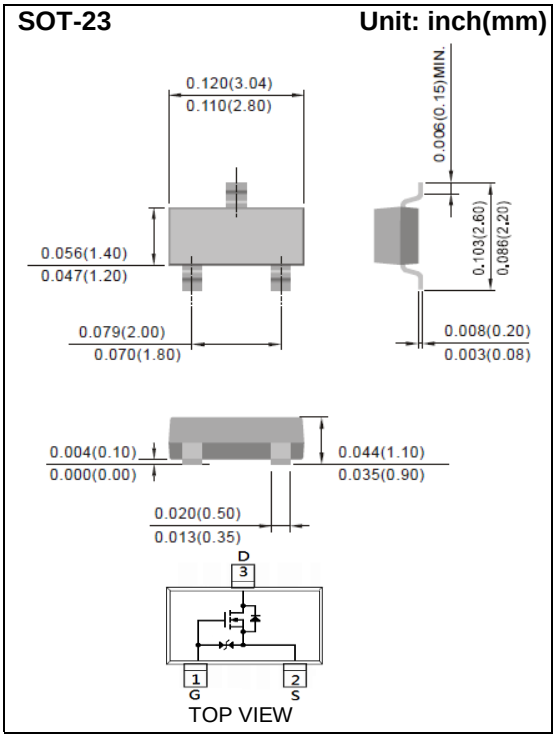
100V N-Channel Enhancement Mode MOSFET – ESD Protected

Voltage	100 V	Current	170 mA



Features

- $R_{DS(ON)}$, V_{GS}@10V, I_D@170mA<6Ω
- $R_{DS(ON)}$, V_{GS}@4.5V, I_D@130mA<10Ω
- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc
- ESD Protected 2KV HBM
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

Mechanical Data

- Case: SOT-23 Package
- Terminals: Solderable per MIL-STD-750, Method 2026

Maximum Ratings and Thermal Characteristics (T_A=25°C unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current		I_D	170	mA
Pulsed Drain Current (Note 4)		I_{DM}	680	mA
Power Dissipation	T_a=25°C	P_D	500	mW
	Derate above 25°C		4	mW/°C
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55~150	°C
Typical Thermal Resistance - Junction to Ambient (Note 3)		$R_{\theta JA}$	250	°C/W

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Electrical Characteristics (T_A=25°C unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250uA	100	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	1	1.7	2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=170mA	-	4	6	Ω
		V_{GS}=4.5V, I_D=130mA	-	4.5	10	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=80V, V_{GS}=0V	-	-	1	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±10	uA
Dynamic (Note 5)						
Total Gate Charge	Q_g	V_{DS}=30V, I_D=170mA, V_{GS}=10V (Note 1,2)	-	1.8	-	nC
Gate-Source Charge	Q_{gs}		-	0.4	-	
Gate-Drain Charge	Q_{gd}		-	0.3	-	
Input Capacitance	Ciss	V_{DS}=25V, V_{GS}=0V, f=1.0MHZ	-	45	-	pF
Output Capacitance	Coss		-	14	-	
Reverse Transfer Capacitance	Crss		-	7.8	-	
Turn-On Delay Time	$td_{(on)}$	V_{DD}=30V, I_D=170mA, V_{GS}=10V, R_G=6Ω (Note 1,2)	-	3.4	-	ns
Turn-On Rise Time	tr		-	19	-	
Turn-Off Delay Time	$td_{(off)}$		-	8.2	-	
Turn-Off Fall Time	tf		-	20	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	170	mA
Diode Forward Voltage	V_{SD}	I_S=170mA, V_{GS}=0V	-	0.9	1.3	V

NOTES :

1. Pulse width≤300us, Duty cycle≤2%
2. Essentially independent of operating temperature typical characteristics.
3. $R_{\Theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins mounted on a 1 inch FR-4 with 2oz. square pad of copper.
4. The maximum current rating is package limited.
5. Guaranteed by design, not subject to production testing.

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TYPICAL CHARACTERISTIC CURVES

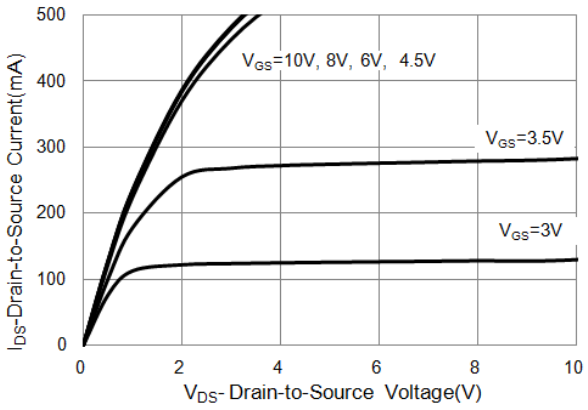

Fig.1 On-Region Characteristics

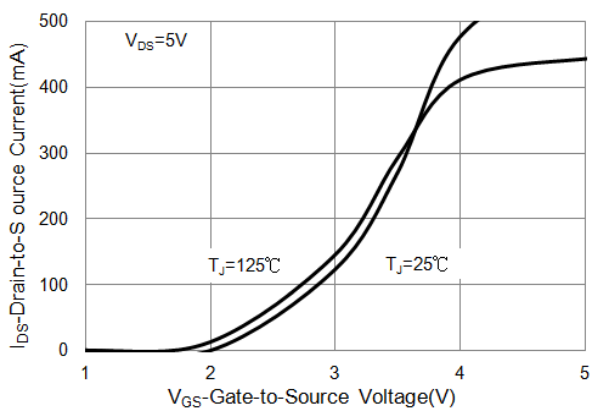

Fig.2 Transfer Characteristics

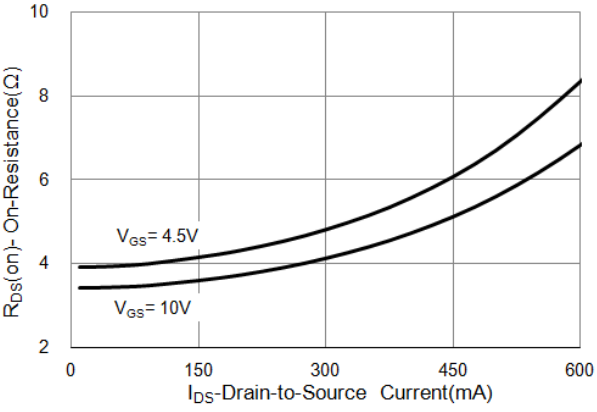

Fig.3 On-Resistance vs. Drain Current

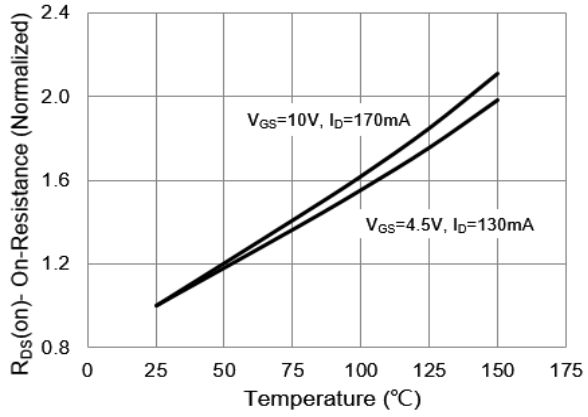

Fig.4 On-Resistance vs. Junction temperature

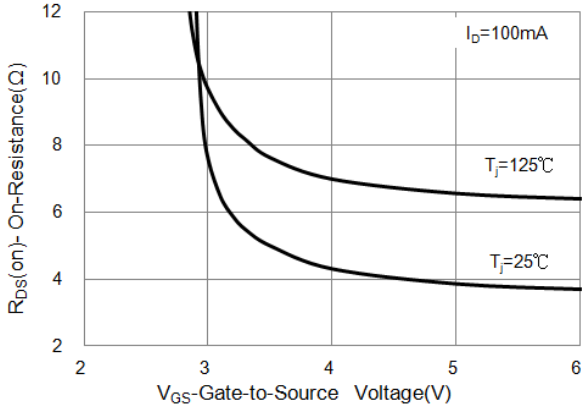

Fig.5 On-Resistance Variation with VGS.

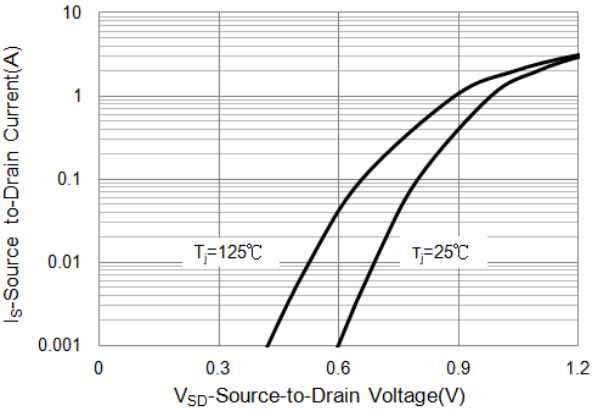

Fig.6 Body Diode Characteristics

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TYPICAL CHARACTERISTIC CURVES

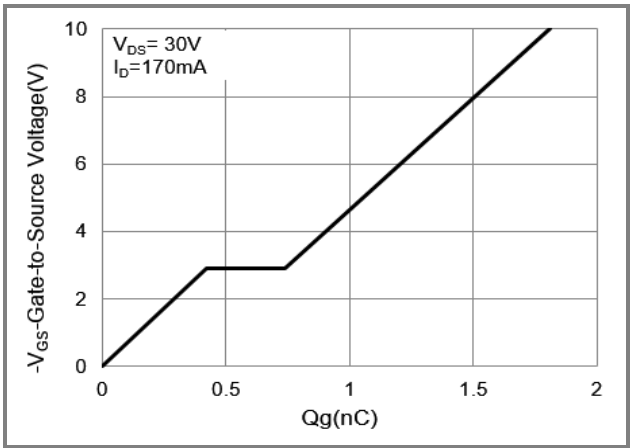

Fig.7 Gate-Charge Characteristics

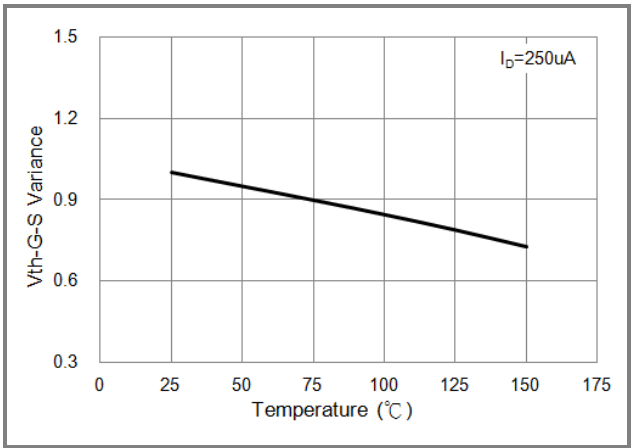

Fig.8 Threshold Voltage Variation with Temperature

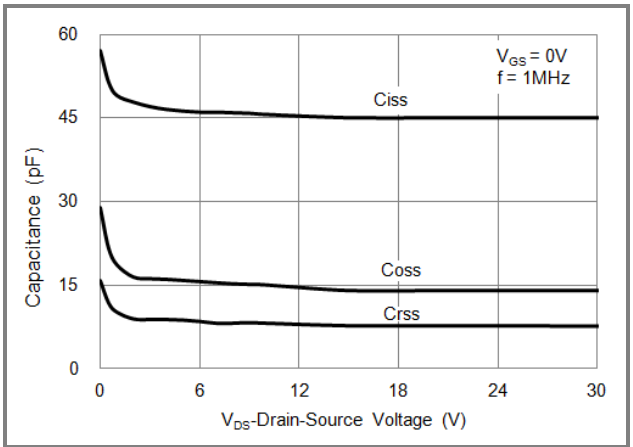

Fig.9 Capacitance vs. Drain-Source Voltage

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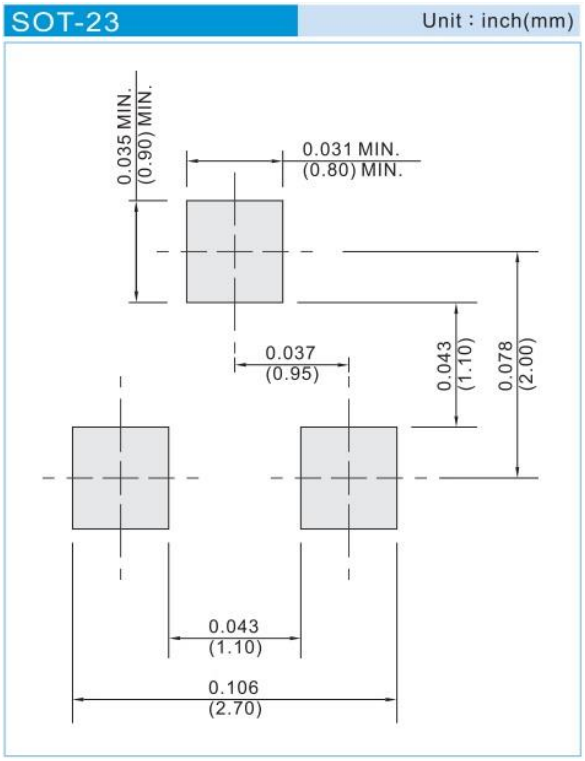
Product and Packing Information

Part No.	Package Type	Packing Type	Marking
BSS123	SOT-23	3K pcs / 7” reel	A76
BSS123	SOT-23	12K pcs / 13” reel	A76

Mounting Pad Layout



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