

BSS123-AU

100V N-Channel Enhancement Mode MOSFET – ESD Protected

Voltage 100 V **Current** 170mA

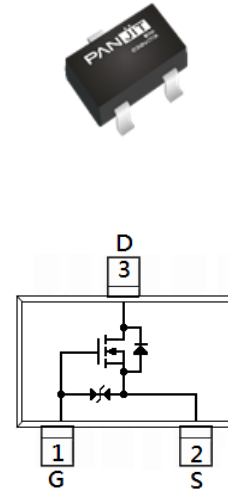
Features

- $R_{DS(ON)}$, $V_{GS}@10V$, $I_D@170mA < 6\Omega$
- $R_{DS(ON)}$, $V_{GS}@4.5V$, $I_D@130mA < 9\Omega$
- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc
- ESD Protected
- AEC-Q101 qualified
- 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
- Approx. Weight : 0.0084 grams

SOT-23



Maximum Ratings and Thermal Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V _{DS}	100	V
Gate-Source Voltage		V _{GS}	±20	
Continuous Drain Current ^(Note 5)		I _D	170	mA
Pulsed Drain Current ^(Note 1)		I _{DM}	680	
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
Thermal Resistance		R _{θJA}	250	°C/W
- Junction to Ambient ^(Note 3)				

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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	
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	9	
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	
Dynamic ^(Note 6)						
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	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz	-	45	-	pF
Output Capacitance	C _{oss}		-	14	-	
Reverse Transfer Capacitance	C _{rss}		-	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_{θJA} 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

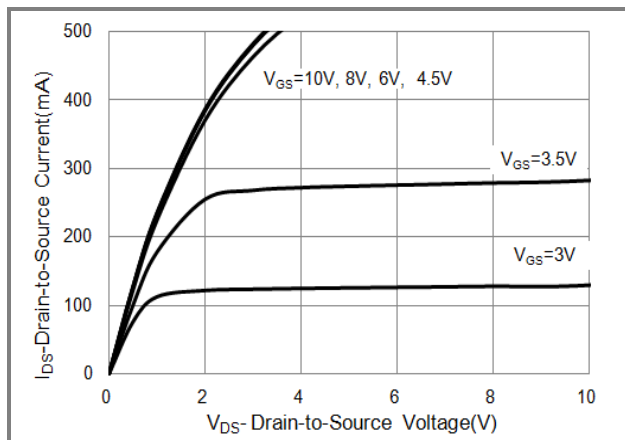


Fig.1 On-Region Characteristics

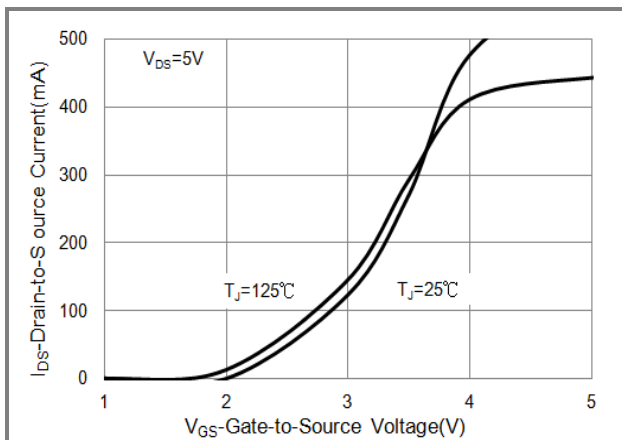


Fig.2 Transfer Characteristics

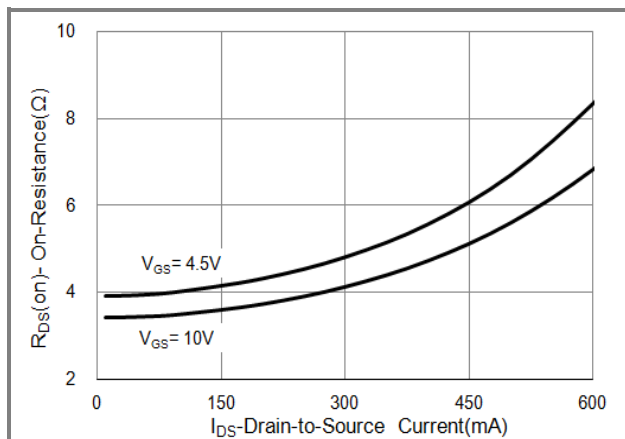


Fig.3 On-Resistance vs. Drain Current

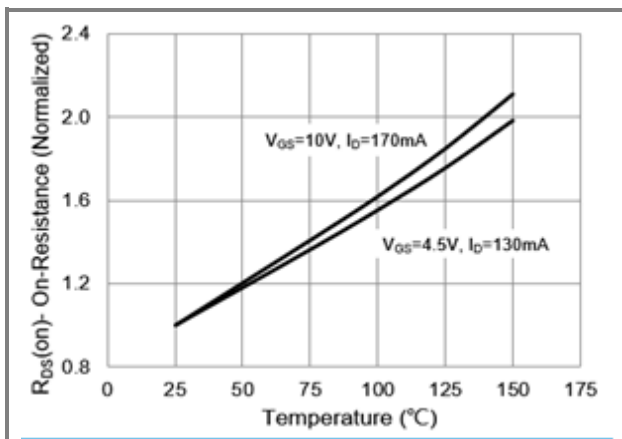


Fig.4 On-Resistance vs. Junction temperature

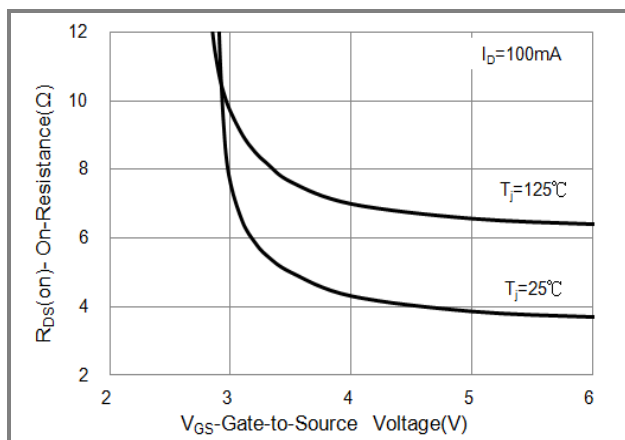


Fig.5 On-Resistance Variation with V_{GS}

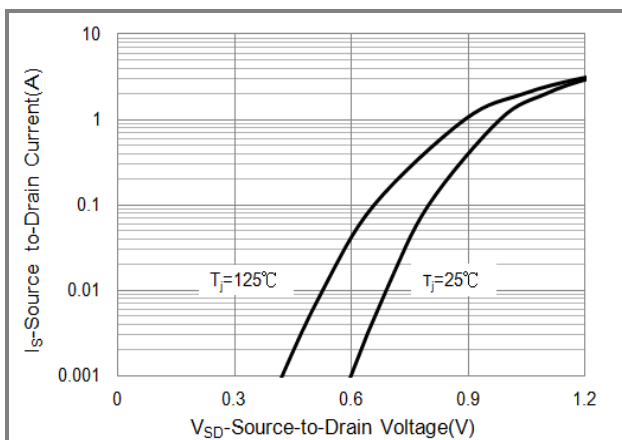


Fig.6 Body Diode Characteristics

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TYPICAL CHARACTERISTIC CURVES

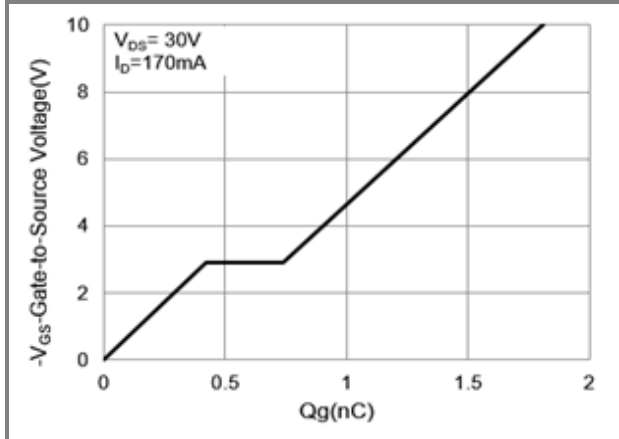


Fig.7 Gate-Charge Characteristics

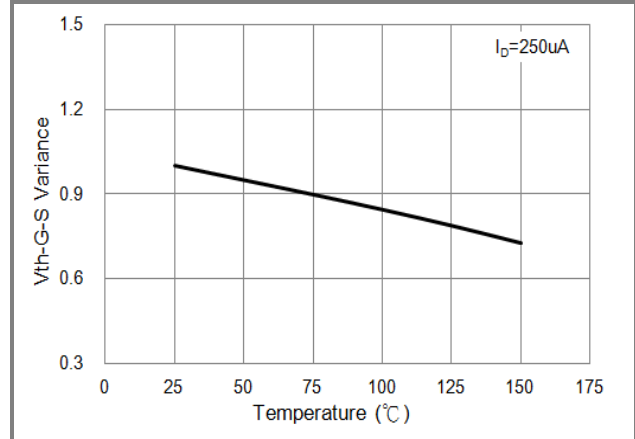


Fig.8 Threshold Voltage Variation with Temperature

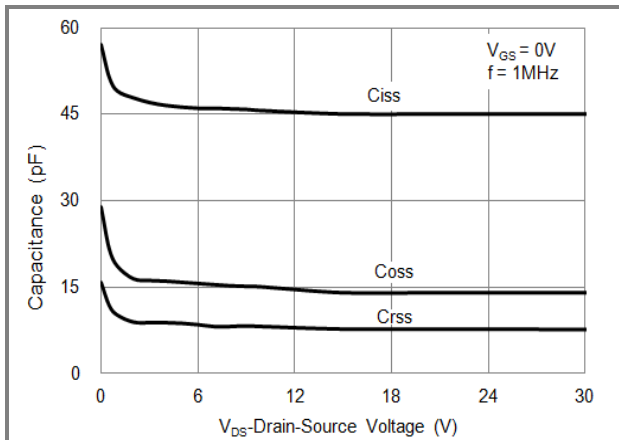


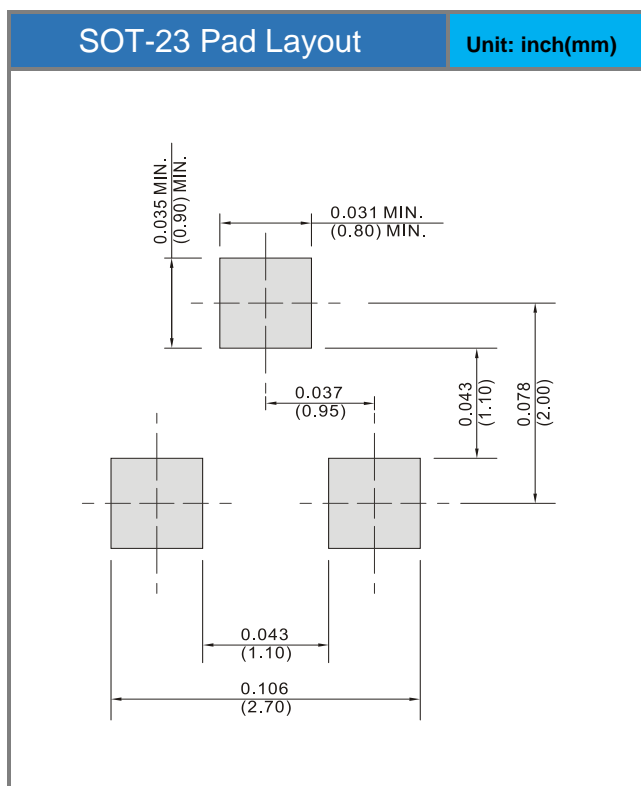
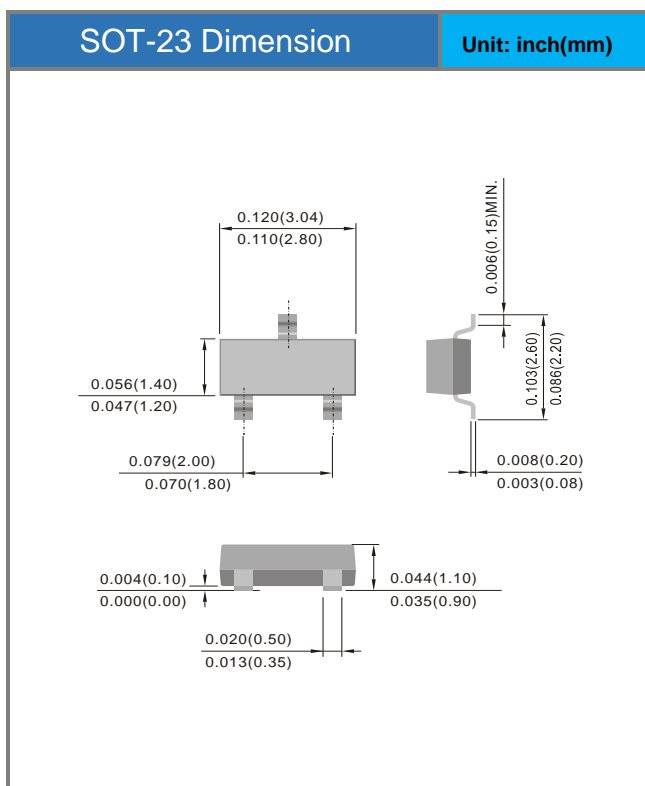
Fig.9 Capacitance vs. Drain-Source Voltage

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Product and Packing Information

Part No.	Package Type	Packing Type	Marking
BSS123-AU	SOT-23	3K pcs / 7" reel	A76

Packaging Information & Mounting Pad Layout



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