



100V N-Channel Enhancement Mode MOSFET

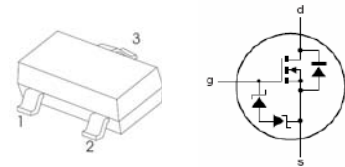
General Features

- $V_{DS} = 100V, I_D = 0.17A$
 $R_{DS(ON)} < 10\Omega @ V_{GS}=4.5V$
 $R_{DS(ON)} < 6\Omega @ V_{GS}=10V$
- ESD Rating: HBM 2000V
- High power and current handling capability
- Lead free product is acquired
- Surface mount package

Application

- Direct logic-level interface: TTL/CMOS
- Drivers: relays, solenoids, lamps, hammers, display, memories, transistors, etc.
- Battery operated systems
- Solid-state relays

SOT-23



1. GATE
2. SOURCE
3. DRAIN

Order Information

Product	Package	Marking	Packing
BSS123	SOT-23	SA	3000PCS/Reel

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current	I_D	0.17	A
Maximum Power Dissipation	P_D	0.35	W
Operating Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 To 150	$^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient ^(Note 2)	$R_{\theta JA}$	350	$^\circ\text{C/W}$

**Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)**

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =250μA	100			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V		±4	±10	uA
On Characteristics (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1		2.8	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =0.17A			6	Ω
		V _{GS} =4.5V, I _D =0.17A			10	Ω
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, F=1.0MHz		73		PF
Output Capacitance	C _{oss}			7		PF
Reverse Transfer Capacitance	C _{rss}			3.4		PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =30V, I _D =0.28A V _{GS} =10V, R _{GEN} =6 Ω		1.7	3.4	nS
Turn-on Rise Time	t _r			9	18	nS
Turn-Off Delay Time	t _{d(off)}			17	31	nS
Turn-Off Fall Time	t _f			2.4	5	nS
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =30V, I _D =0.22A		1.7	2.5	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V _{SD}	V _{GS} =0V, I _S =0.34A			1.3	V

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production



■ Typical Characteristics

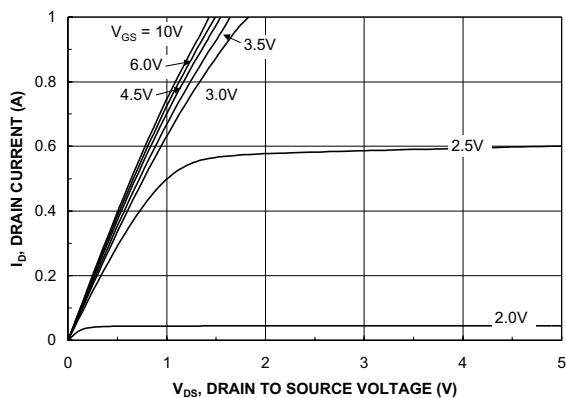


Figure 1. On-Region Characteristics.

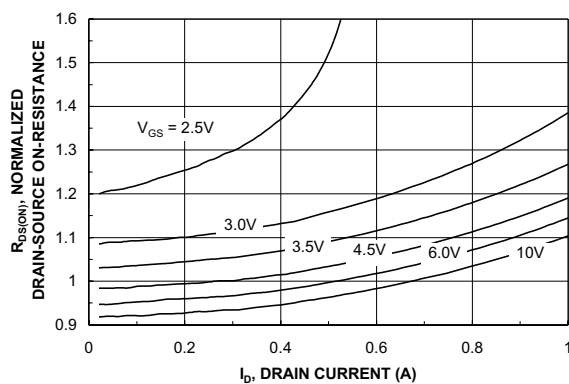


Figure 2. On-Resistance Variation with Drain Current and Gate Voltage.

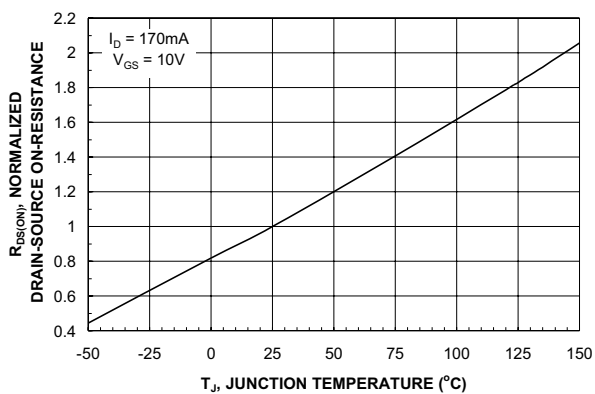


Figure 3. On-Resistance Variation with Temperature.

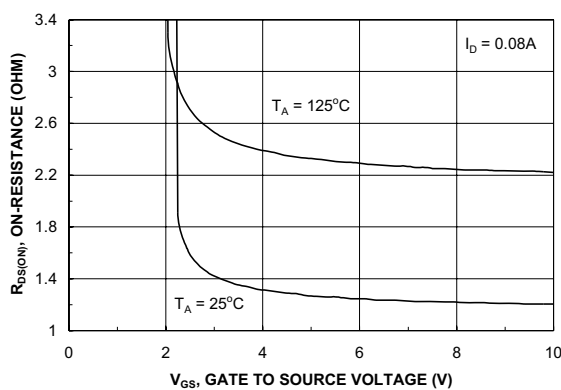


Figure 4. On-Resistance Variation with Gate-to-Source Voltage.

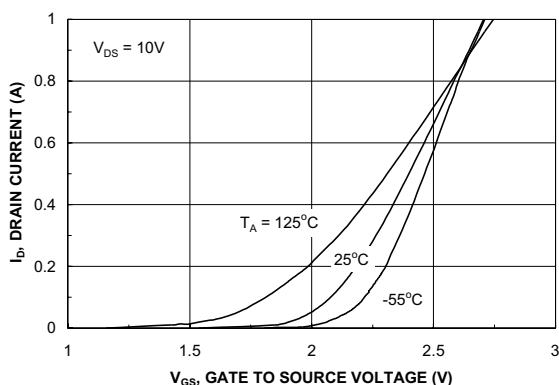


Figure 5. Transfer Characteristics.

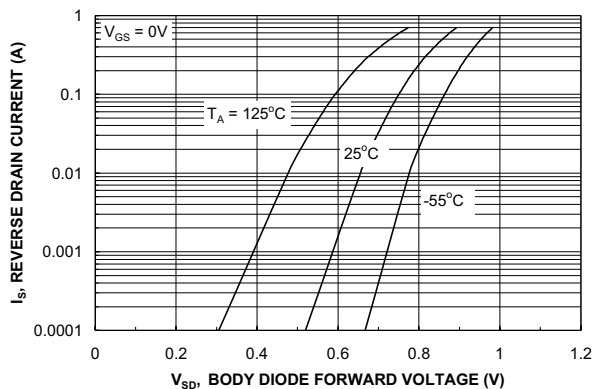


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature.



■ Typical Characteristics

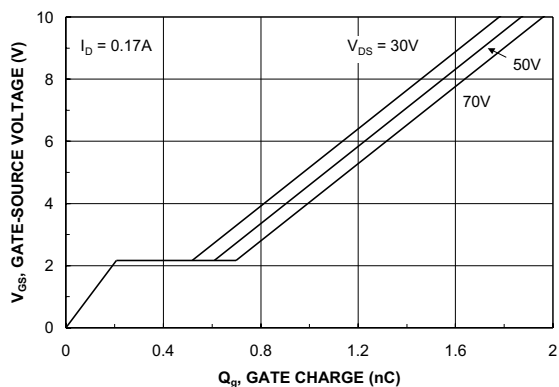


Figure 7. Gate Charge Characteristics.

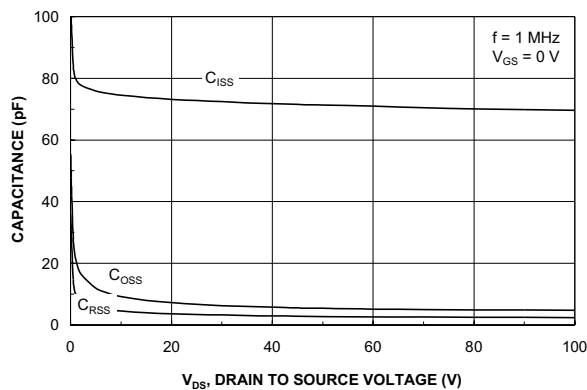


Figure 8. Capacitance Characteristics.

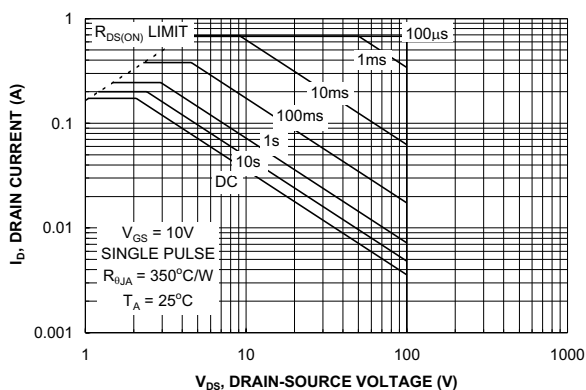


Figure 9. Maximum Safe Operating Area.

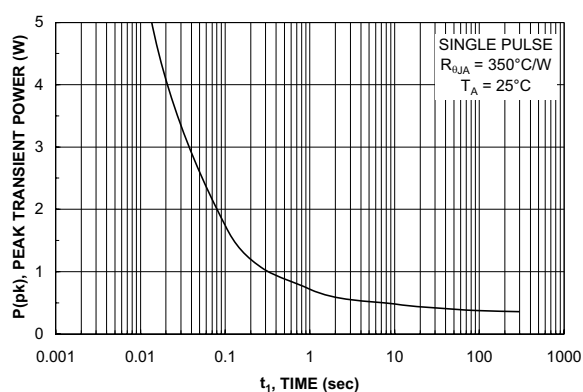
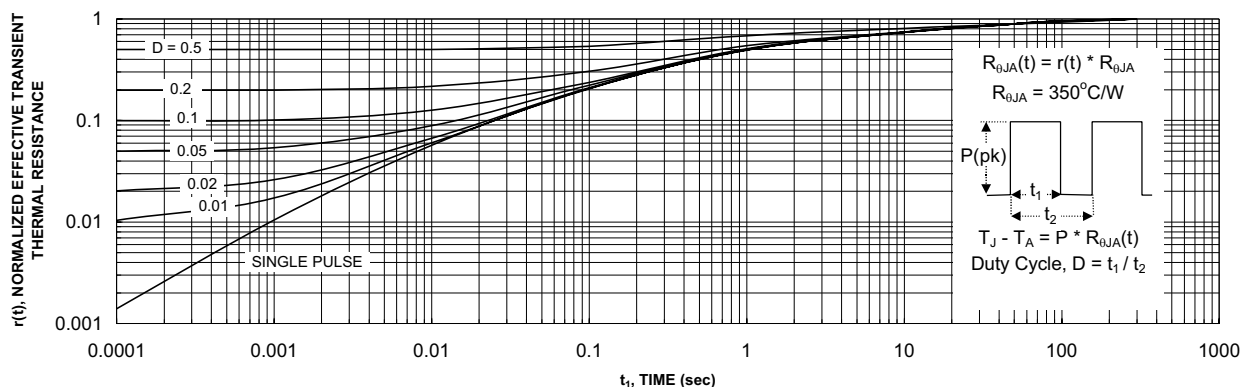
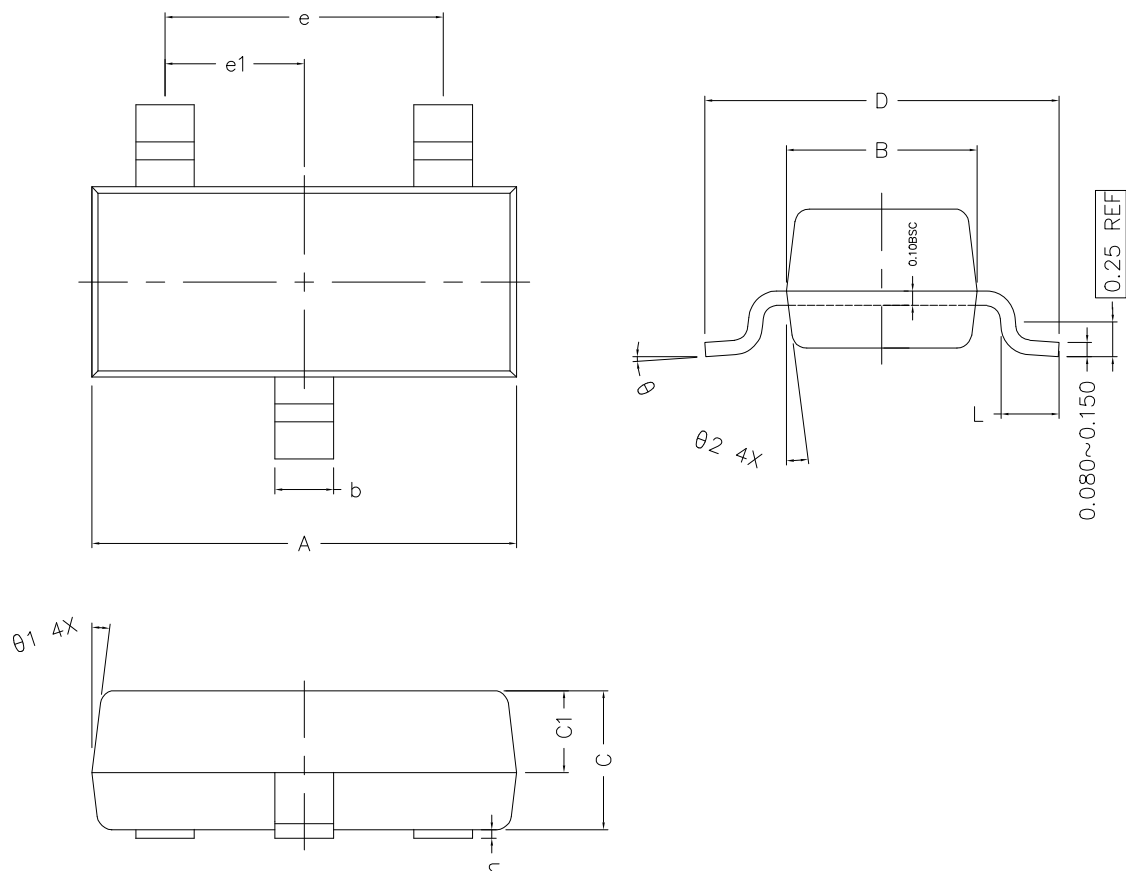


Figure 10. Single Pulse Maximum Power Dissipation.





SOT-23 Package Outline Dimensions (Units: mm)



	COMMON DIMENSIONS (UNITS OF MEASURE IS mm)		
	MIN	NORMAL	MAX
A	2.800	2.900	3.000
B	1.200	1.300	1.400
C	0.900	1.000	1.100
C1	0.500	0.550	0.600
D	2.250	2.400	2.550
L	0.300	0.400	0.500
h	0.010	0.050	0.100
b	0.300	0.400	0.500
e	1.90 TYPE		
e1	0.95 TYPE		
θ ₁	7° TYPE		
θ ₂	7° TYPE		
θ	0° ~ 7°		