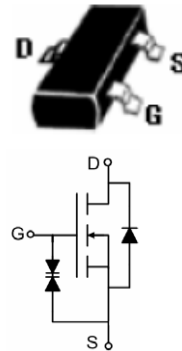


500mA N-ch Power MOSFET - 50V
PRIMARY CHARACTERISTICS

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
50V	$3\Omega @ V_{GS}=10V$	0.5A
	$4\Omega @ V_{GS}=4.5V$	

SOT-23 PACKAGE

FEATURES

- N-Channel Switch with Low $R_{DS(on)}$
- Operated at Low Logic Level Gate Drive
- Surface Mount Package
- ESD Protected:1500V

MECHANICAL DATA

- Case : Molded plastic,SOT-23
- Polarity : Shown above
- Terminals :Plated terminals, solderable per MIL-STD-750,Method 2026
- Epoxy : UL94-V0 rated flame retardant

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

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		50	V
V_{GSS}	Gate-Source Voltage		± 20	V
I_D	Continuous Drain Current	$T_C = 25^\circ\text{C}$	0.5	A
		$T_C = 100^\circ\text{C}$	0.3	
I_{DM}	Pulsed Drain Current ^{note1}		2	A
P_D	Power Dissipation	$T_A = 25^\circ\text{C}$	0.35	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient		375	$^\circ\text{C/W}$
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	$^\circ\text{C}$

500mA N-ch Power MOSFET - 50V
Electrical Characteristics ($T_C=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D = 250μA	50	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =48V, V _{GS} =0V,	-	-	1	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} = ±20V	-	-	±5	uA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	0.8	1	1.45	V
R _{DS(on)}	Static Drain-Source on-Resistance note2	V _{GS} =10V, I _D =0.5A	-	1.5	3	Ω
		V _{GS} =4.5V, I _D =0.2A	-	1.8	4	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f = 1.0MHz	-	22.8	-	pF
C _{oss}	Output Capacitance		-	3.5	-	pF
C _{rss}	Reverse Transfer Capacitance		-	2.9	-	pF
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} =30V, V _{GEN} =10V	-	3.8	-	ns
t _{d(off)}	Turn-off Delay Time	I _D =0.5A, R _{GEN} =25Ω, R _L =60Ω	-	19	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	0.22	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	0.88	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =0.5A	0.5	-	1.3	V

Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

Typical Performance Characteristics

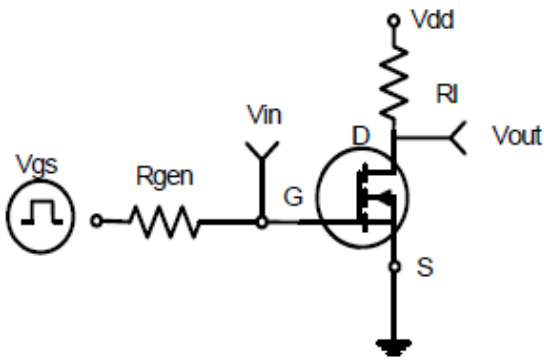


Figure1:Switching Test Circuit

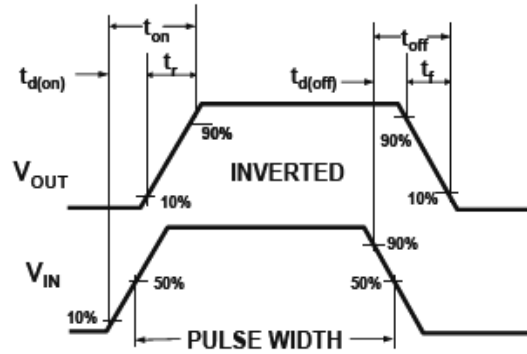
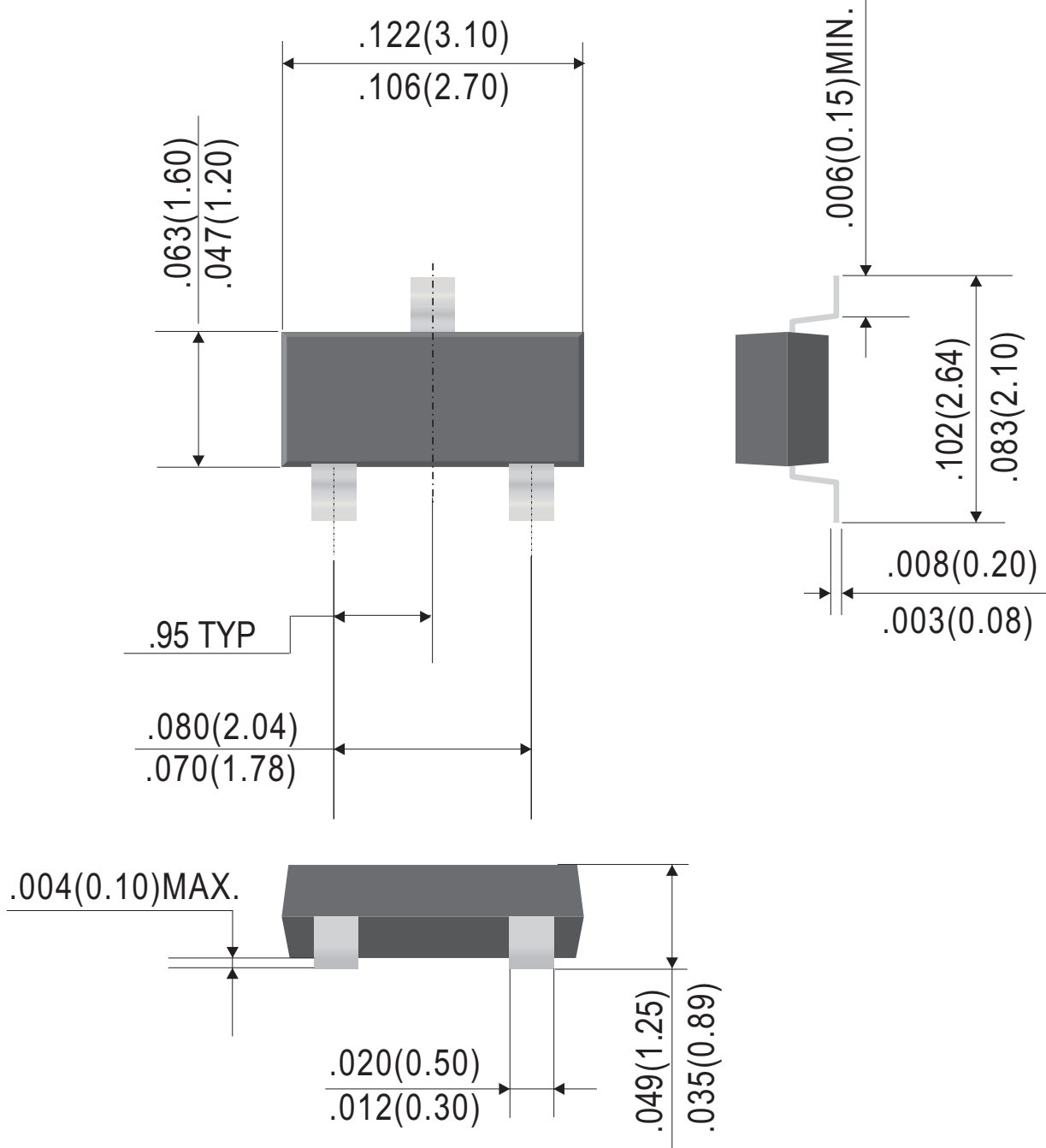


Figure2:Switching Waveforms

Outline Drawing

SOT-23



Dimensions in inches and (millimeters)

Rev.E

Ordering Information:

Device PN	Packing
BSS139K -T ⁽¹⁾ H ⁽²⁾ -WS ⁽³⁾	Tape&Reel: 3 Kpcs/Reel

Note: (1) Packing code, Tape & Reel Packing

(2) RoHS product for packing code suffix "G" ; Halogen free product for packing code suffix "H"

(3) WS : Willas brand abbreviation, Label Type does not display

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