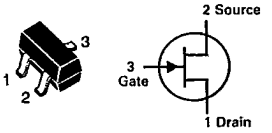
BSR56L thru BSR58L

CASE 318-03, STYLE 10
SOT-23 (TO-236AB)



JFET SWITCHING TRANSISTORS

N-CHANNEL

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain-Source Voltage	$\pm V_{DS}$	40	V
Drain-Gate Voltage	V_{DG}	40	V
Gate-Source Voltage	V_{GS}	40	V
Forward Gate Current	$I_{G(f)}$	50	mA

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board,* T_A = 25°C Derate above 25°C	P_D	225 1.8	mW mW/°C
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	556	°C/W
Total Device Dissipation Alumina Substrate,** T_A = 25°C Derate above 25°C	P_D	300 2.4	mW mW/°C
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	417	°C/W
Junction and Storage Temperature	T_J, T_{stg}	−55 to +150	°C

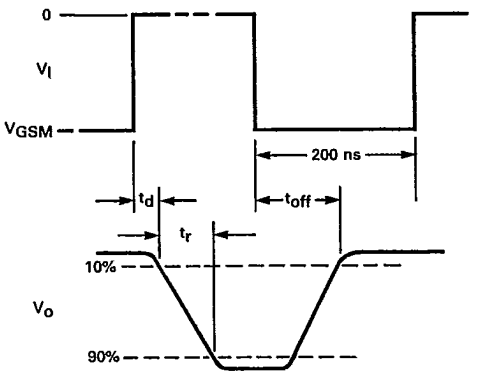
*FR-5 = 1.0 x 0.75 x 0.062 in.
**Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.

DEVICE MARKING

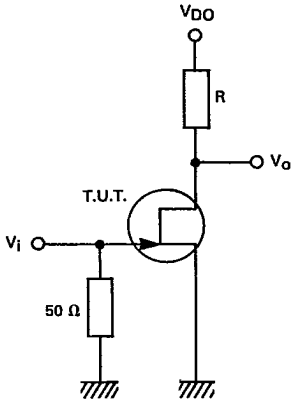
BSR56L = M4; BSR57L = M5; BSR58L = M6

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Gate-Source Breakdown Voltage (I_G = 1.0 μAdc, V_{DS} = 0)		$V_{(BR)GSS}$	40	—	Vdc
Gate-Reverse Current (V_{DS} = 0 V, V_{GS} = 20 V)		I_{GSS}	—	1.0	nA
Gate-Source Cutoff Voltage (V_{DS} = 15 V, I_D = 0.5 nA)	BSR56L BSR57L BSR58L	$V_{GS(off)}$	−4.0 −2.0 −0.8	−10 −6.0 −4.0	V
ON CHARACTERISTICS					
Zero-Gate Voltage Drain (V_{DS} = 15 V, V_{GS} = 0)	BSR56L BSR57L BSR58L	I_{DSS}	50 20 8.0	— 100 80	mA
Drain-Source On Voltage (I_D = 20 mA, V_{GS} = 0) (I_D = 10 mA, V_{GS} = 0) (I_D = 5.0 mA, V_{GS} = 0)	BSR56L BSR57L BSR58L	$V_{DS(on)}$	— — —	0.75 0.5 0.4	Vdc
Static Drain-Source On Resistance (I_D = 0 mAdc, V_{GS} = 0, f = 1.0 kHz)	BSR56L BSR57L BSR58L	$r_{DS(on)}$	— — —	25 40 60	Ohms
SWITCHING CHARACTERISTICS					
Delay Time: V_{DD} = 10 V; V_{GS} = 0 (V_{GSM} = 10 V, I_D = 20 mA) (V_{GSM} = 6.0 V, I_D = 10 mA) (V_{GSM} = 4.0 V, I_D = 5.0 mA)	BSR56L BSR57L BSR58L	t_d	— — —	6.0 6.0 10	ns
Rise Time: V_{DD} = 10 V; V_{GS} = 0 (V_{GSM} = 10 V, I_D = 20 mA) (V_{GSM} = 6.0 V, I_D = 10 mA) (V_{GSM} = 4.0 V, I_D = 5.0 mA)	BSR56L BSR57L BSR58L	t_r	— — —	3.0 4.0 10	ns
Turn-Off Time: V_{DD} = 10 V; V_{GS} = 0 (V_{GSM} = 10 V, I_D = 20 mA (V_{GSM} = 6.0 V, I_D = 10 mA) (V_{GSM} = 4.0 V, I_D = 5.0 mA)	BSR56L BSR57L BSR58L	t_{off}	— — —	25 50 100	ns



SWITCHING TIMES WAVEFORMS



BSR56; R = 464 Ω
BSR57; R = 953 Ω
BSR58; R = 1910 Ω

Pulse Generator
$t_r = t_f \leq 1.0$ ns
$\delta = 0.02$
$Z_o = 50\ \Omega$

Oscilloscope
$t_r \leq 0.75$ ns
$R_i \geq 1\ M\Omega$
$C_i \leq 2.5$ pF

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