

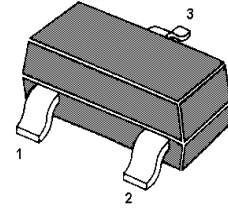
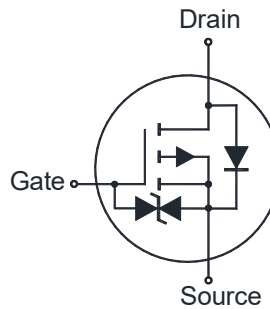
BSS84K

P-Channel Enhancement Mode MOSFET

Features

- ESD protection
- Halogen and Antimony Free(HAF), RoHS compliant
- Typical ESD Protection HBM Class 1C

Classification	Voltage Range(V)
0A	< 125
0B	125 to < 250
1A	250 to < 500
1B	500 to < 1000
1C	1000 to < 2000
2	2000 to < 4000
3A	4000 to < 8000
3B	≥ 8000



1. Gate 2. Source 3. Drain
SOT-23 Plastic Package

Applications

- Portable appliances

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$-V_{DS}$	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	$-I_D$	180	mA
Peak Drain Current, Pulsed ¹⁾	$-I_{DM}$	700	mA
Power Dissipation ²⁾	P_D	225	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	556 ²⁾ 265 ³⁾	$^\circ\text{C/W}$
Operating Junction Temperature Range	T_j	- 55 to + 150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	- 55 to + 150	$^\circ\text{C}$

¹⁾ Pulse Test: Pulse Width $\leq 100 \mu\text{s}$, Duty Cycle $\leq 2\%$, Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^\circ\text{C}$.

²⁾ Device mounted on FR-4 substrate PC board, with minimum recommended pad layout.

³⁾ Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate.

Characteristics at $T_a = 25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit
STATIC PARAMETERS					
Drain-Source Breakdown Voltage at $-I_D = 250\ \mu\text{A}$	$-V_{(BR)DSS}$	60	-	-	V
Zero Gate Voltage Drain Current at $-V_{DS} = 25\ \text{V}$ at $-V_{DS} = 60\ \text{V}$	$-I_{DSS}$	- -	- -	0.1 1	μA
Gate-Source Leakage at $V_{GS} = \pm 20\ \text{V}$	I_{GSS}	-	-	± 10	μA
Gate-Source Threshold Voltage at $V_{DS} = V_{GS}$, $-I_D = 250\ \mu\text{A}$	$-V_{GS(th)}$	0.9	-	2	V
Drain-Source On-State Resistance at $-V_{GS} = 5\ \text{V}$, $-I_D = 0.1\ \text{A}$	$R_{DS(on)}$	-	2.6	10	Ω
DYNAMIC PARAMETERS					
Forward Transconductance at $-V_{DS} = 25\ \text{V}$, $-I_D = 0.1\ \text{A}$, $f = 1\ \text{KHz}$	g_{fs}	50	-	-	mS
Input Capacitance at $V_{GS} = 0\ \text{V}$, $-V_{DS} = 30\ \text{V}$, $f = 1\ \text{MHz}$	C_{iss}	-	38	-	pF
Output Capacitance at $V_{GS} = 0\ \text{V}$, $-V_{DS} = 30\ \text{V}$, $f = 1\ \text{MHz}$	C_{oss}	-	9	-	pF
Reverse Transfer Capacitance at $V_{GS} = 0\ \text{V}$, $-V_{DS} = 30\ \text{V}$, $f = 1\ \text{MHz}$	C_{rss}	-	6	-	pF
Total Gate Charge at $-V_{DS} = 25\ \text{V}$, $-V_{GS} = 4.5\ \text{V}$, $-I_D = 0.1\ \text{A}$	Q_g	-	1.1	-	nC
Gate Source Charge at $-V_{DS} = 25\ \text{V}$, $-V_{GS} = 4.5\ \text{V}$, $-I_D = 0.1\ \text{A}$	Q_{gs}	-	0.3	-	nC
Gate Drain Charge at $-V_{DS} = 25\ \text{V}$, $-V_{GS} = 4.5\ \text{V}$, $-I_D = 0.1\ \text{A}$	Q_{gd}	-	0.2	-	nC
Turn-On Rise Time at $-V_{DS} = 25\ \text{V}$, $-V_{GS} = 10\ \text{V}$, $-I_D = 0.1\ \text{A}$, $R_g = 6.8\ \Omega$	$t_{d(on)}$	-	14	-	ns
Turn-On Rise Time at $-V_{DS} = 25\ \text{V}$, $-V_{GS} = 10\ \text{V}$, $-I_D = 0.1\ \text{A}$, $R_g = 6.8\ \Omega$	t_r	-	4	-	ns
Turn-Off Delay Time at $-V_{DS} = 25\ \text{V}$, $-V_{GS} = 10\ \text{V}$, $-I_D = 0.1\ \text{A}$, $R_g = 6.8\ \Omega$	$t_{d(off)}$	-	15	-	ns
Turn-Off Fall Time at $-V_{DS} = 25\ \text{V}$, $-V_{GS} = 10\ \text{V}$, $-I_D = 0.1\ \text{A}$, $R_g = 6.8\ \Omega$	t_f	-	77	-	ns
Body-Diode PARAMETERS					
Drain-Source Diode Forward Voltage at $-I_S = 0.5\ \text{A}$	$-V_{SD}$	-	-	1.2	V
Body Diode Reverse Recovery Time at $-I_S = 0.1\ \text{A}$, $di/dt = 100\ \text{A} / \mu\text{s}$	t_{rr}	-	60	-	ns
Body Diode Reverse Recovery Charge at $-I_S = 0.1\ \text{A}$, $di/dt = 100\ \text{A} / \mu\text{s}$	Q_{rr}	-	58	-	nC

Electrical Characteristics Curves

Fig. 1 Typical Output Characteristic

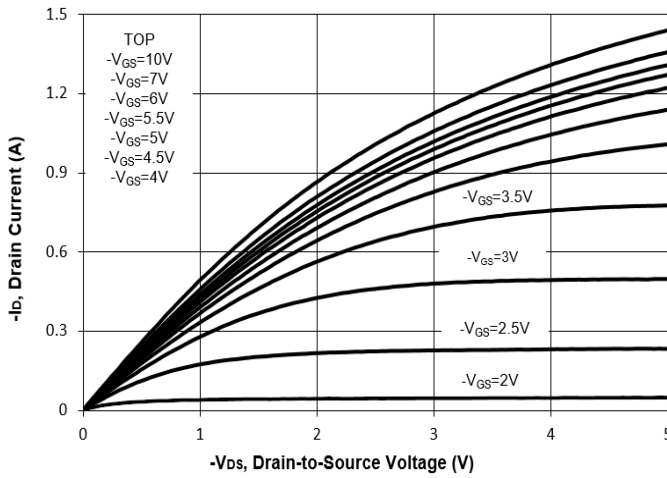


Fig. 2 Typical Transfer Characteristic

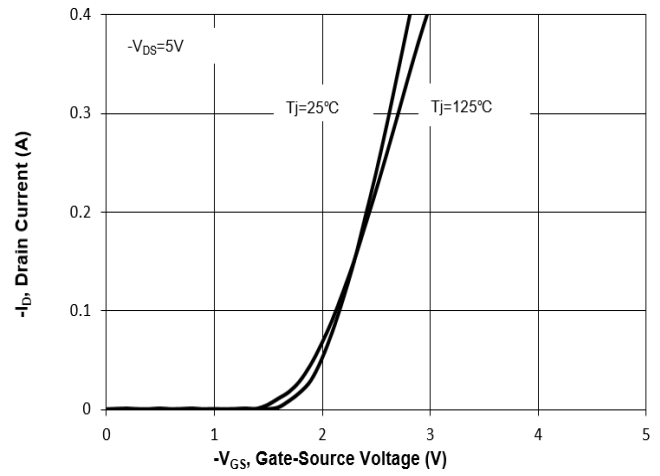


Fig. 3 on-Resistance vs. Gate Voltage

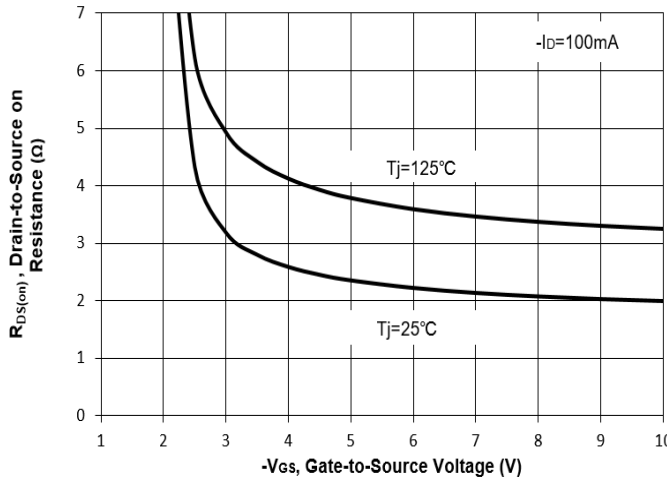


Fig. 4 on-Resistance vs. T_J

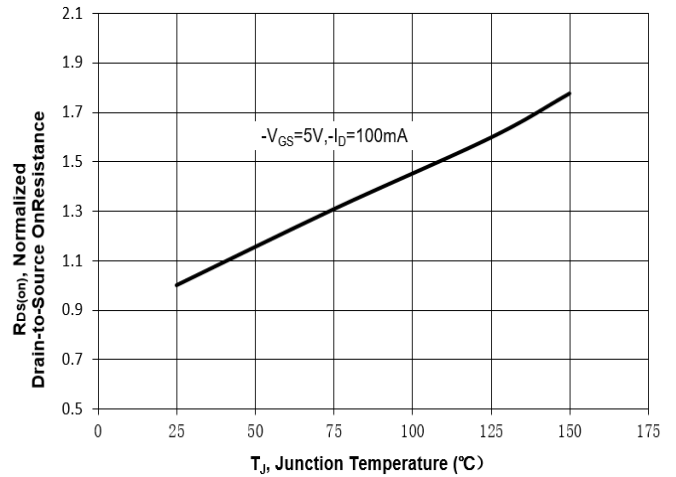


Fig. 5 On-Resistance vs. Drain Current

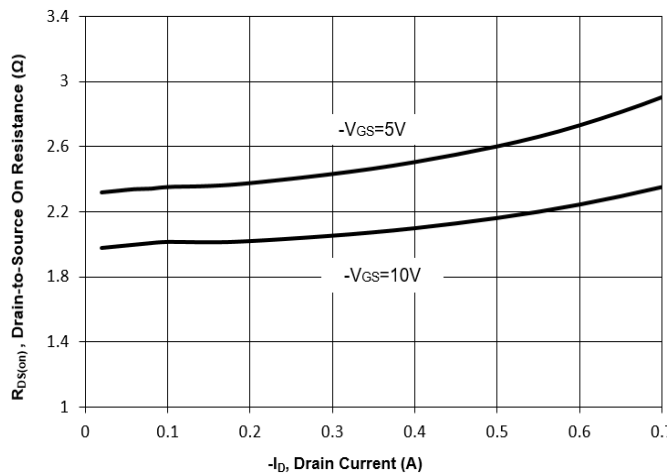
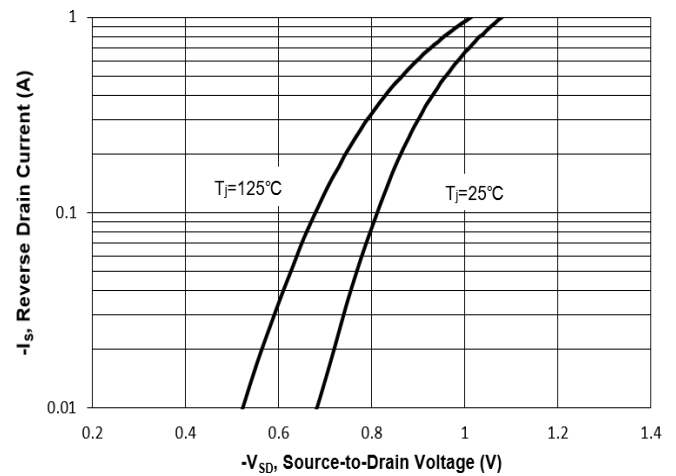


Fig. 6 Typical Forward Characteristic



Electrical Characteristics Curves

Fig. 7 $V_{(BR)DSS}$ vs. Junction Temperature

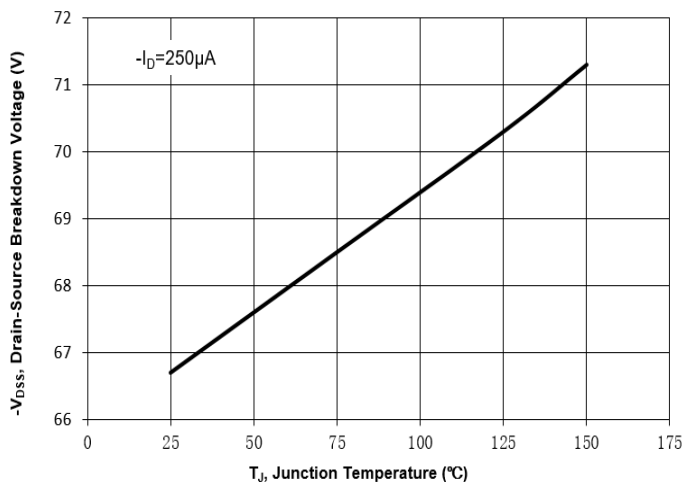


Fig. 8 Gate Threshold Variation vs. T_J

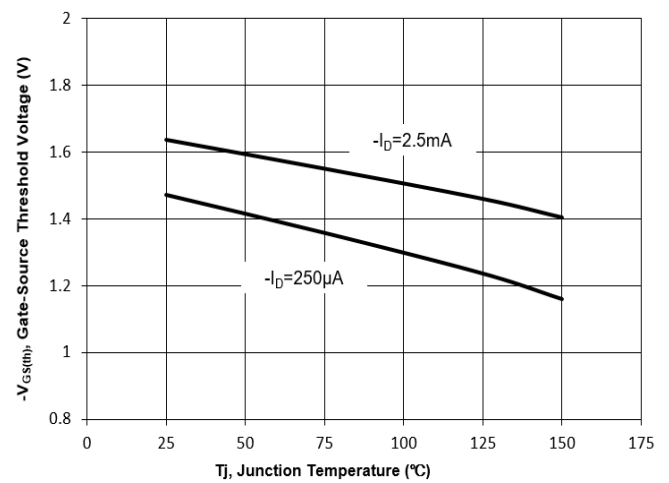


Fig. 9 Typical Junction Capacitance

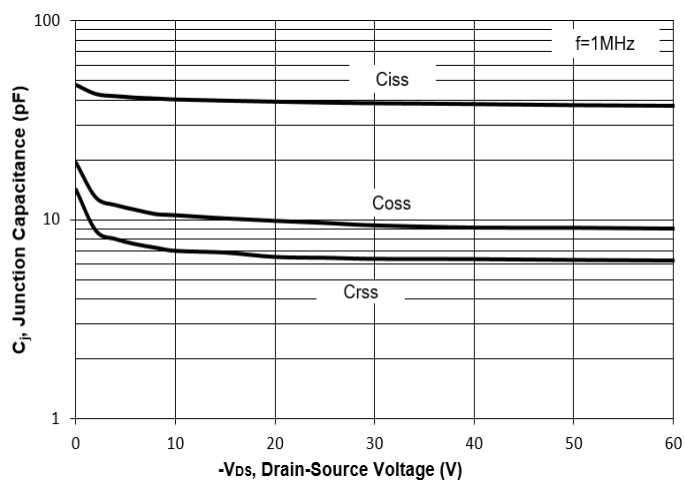


Fig. 10 Gate Charge

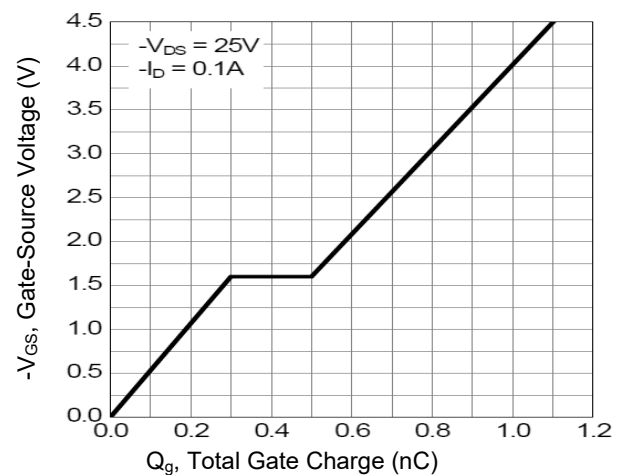
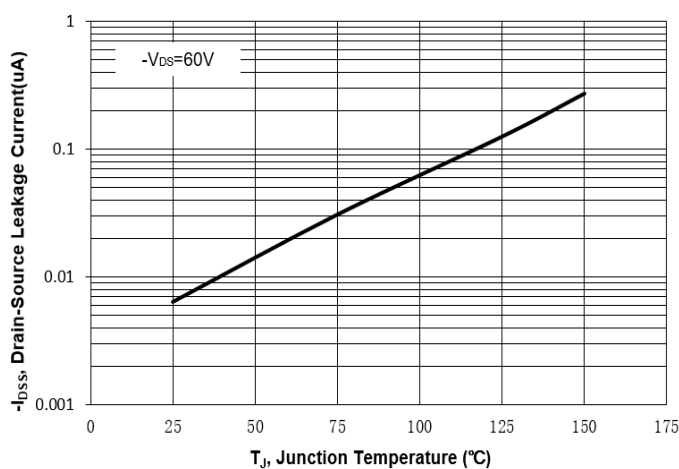
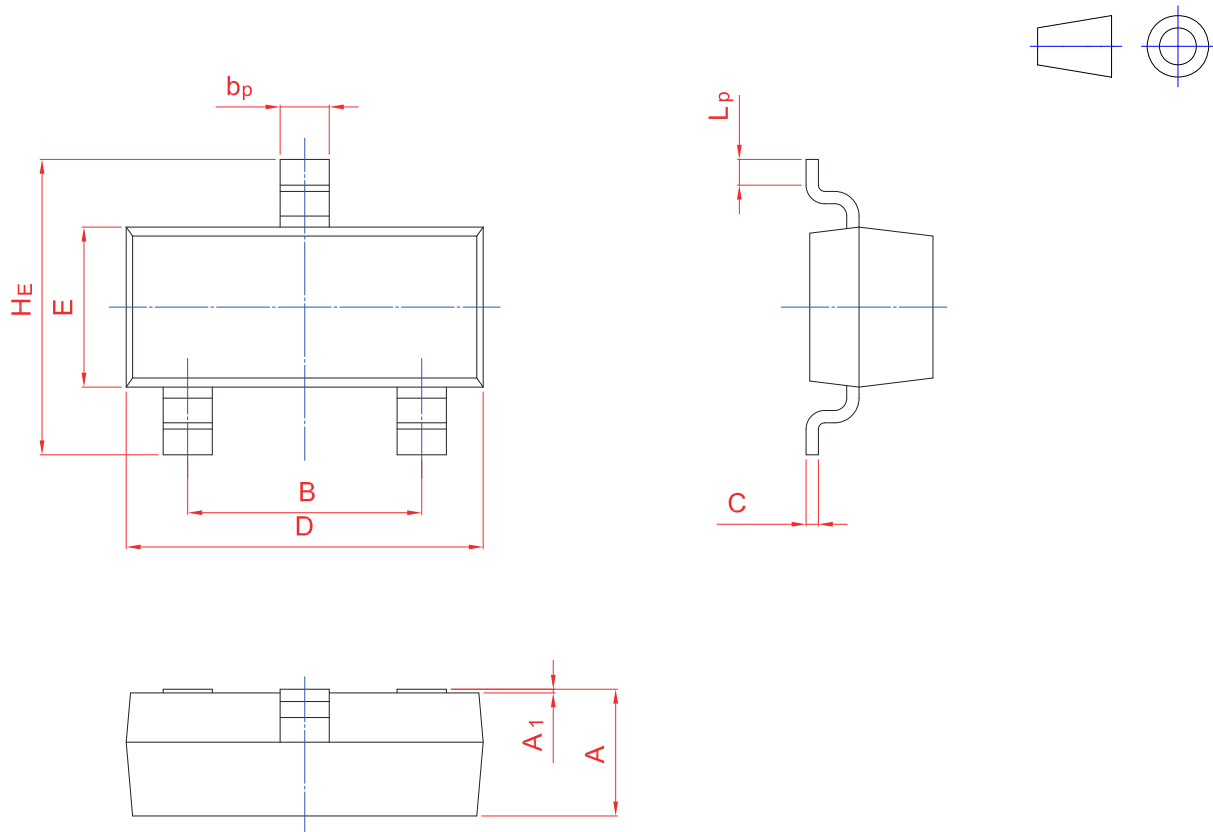


Fig. 11 Drain-Source Leakage Current vs. T_J



PACKAGE OUTLINE

SOT-23



UNIT	A	B	b _p	C	D	E	H _E	A ₁	L _p
mm	1.40 0.89	2.04 1.78	0.51 0.30	0.19 0.08	3.10 2.70	1.65 1.20	3.00 2.20	0.100 0.013	0.50 0.20

Marking information

" VY " = Part No.

" • " = HAF (Halogen and Antimony Free)

"YM" = Date Code Marking

"Y" = Year

"M" = Month

Font type: Arial

