P-Channel Enhancement Mode MOSFET

BSS84EV

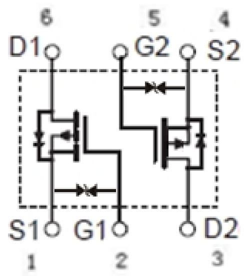
Features

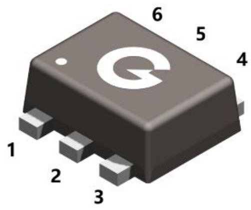
- Advanced trench technology
- Low on-resistance
- High-speed switching
- Drive circuits can be simple
- Parallel use is easy
- HBM: JESD22-A114-B: 2
- RoHS compliant with Halogen-free

HF

Mechanical Data

- Case: SOT-563
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin-Plated Leads, Solderability-per MIL-STD-202, Method 208





SOT-563

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BSS84EV	SOT-563	3000 pcs / Tape & Reel	ES

Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DSS}	-60	V
Gate-to-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current (T_A = 25°C) [*1]	I_D	-130	mA
Continuous Drain Current (T_A = 70°C) [*1]		-100	
Pulsed Drain Current (t_p =10μs, T_A = 25°C)	I_{DM}	-520	mA
Single Pulse Avalanche Energy [*3]	E_{AS}	0.3	mJ
Power Dissipation (T_A = 25°C) [*1]	P_D	0.25	W
Operating Junction Temperature Range	T_J	-55 ~ +150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance Junction-to-Case	$R_{θJC}$	-	-	342	°C/W
Thermal Resistance Junction-to-Air [*1]	$R_{θJA}$	-	-	500	°C/W

Electrical Characteristics (@ T_A = 25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
V_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = -250μA	-60	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = -60V, V_{GS} = 0V	-	-	-1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS} = ±20V, V_{DS} = 0V	-	-	±10	μA
On Characteristics						
$R_{DS(ON)}$	Drain-Source On-resistance [*2]	V_{GS} = -10V,I_D = -0.13A	-	2	6	Ω
		V_{GS} = -5V,I_D = -0.1A	-	3	8	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = -250μA	-1	-1.5	-3	V
R_G	Gate Resistance	V_{GS} = 0V, f = 1MHz	-	544	-	Ω
Dynamic Characteristics						
C_{ISS}	Input Capacitance	V_{GS} = 0V V_{DS} = -20V f = 1.0MHz	-	39	-	pF
C_{OSS}	Output Capacitance		-	12	-	
C_{RSS}	Reverse Transfer Capacitance		-	2	-	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time [*4]	V_{DD} = -15V R_L = -50Ω I_D = -2.5A	-	2.5	-	ns
t_r	Turn-on Rise Time [*4]		-	1	-	
$t_{d(OFF)}$	Turn-Off Delay Time [*4]		-	16	-	
t_f	Turn-Off Fall Time [*4]		-	8	-	
Q_G	Total Gate-Charge	V_{DD} = -25V V_{GS} = -4.5V I_D = -0.2A	-	2	-	nC
Q_{GS}	Gate to Source Charge		-	0.7	-	
Q_{GD}	Gate to Drain (Miller) Charge		-	0.5	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage [*2]	I_{SD} = -0.26A, V_{GS} = 0V	-	-0.9	-1.4	V

Notes:

1. The data tested by surface mounted on a minimum recommended FR-4 board
2. The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%
3. The E_{AS} data shows Max. rating. The test condition is V_{DD} = -30V, V_{GS} = -10V, L = 0.1mH
4. Guaranteed by design, not subject to production

Ratings and Characteristics Curves (@ T_A = 25°C unless otherwise specified)

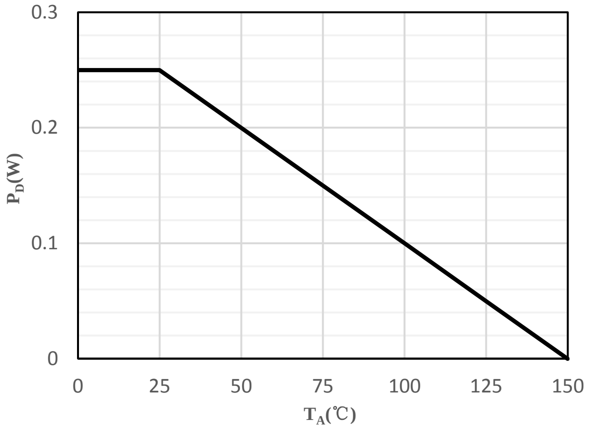


Fig 1 Power Dissipation

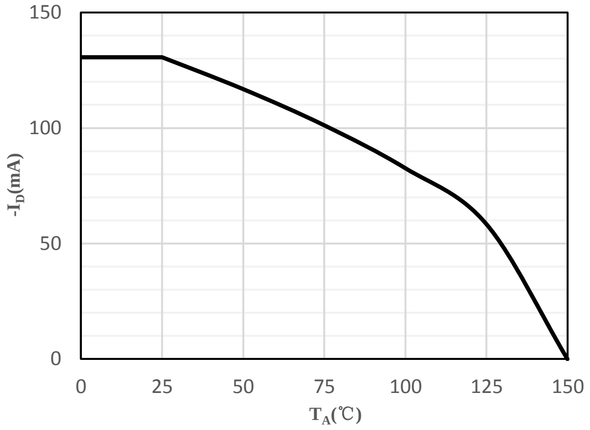


Fig 2 Drain Current

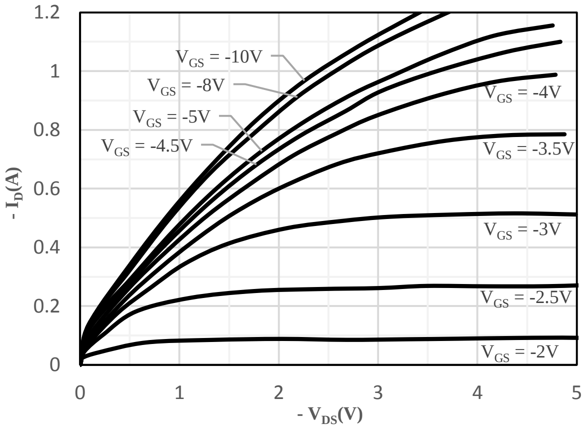


Fig 3 Typical Output Characteristics

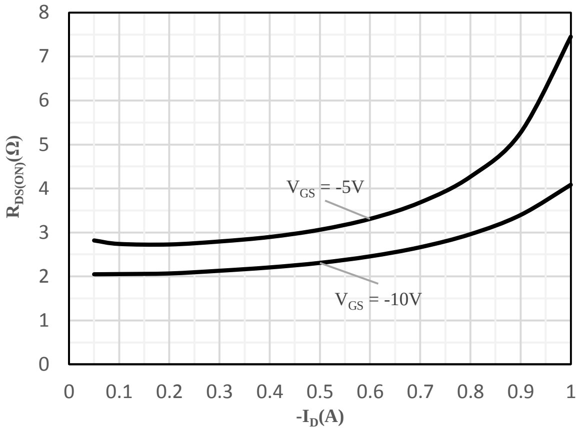


Fig 4 On-Resistance vs. Drain Current and Gate Voltage

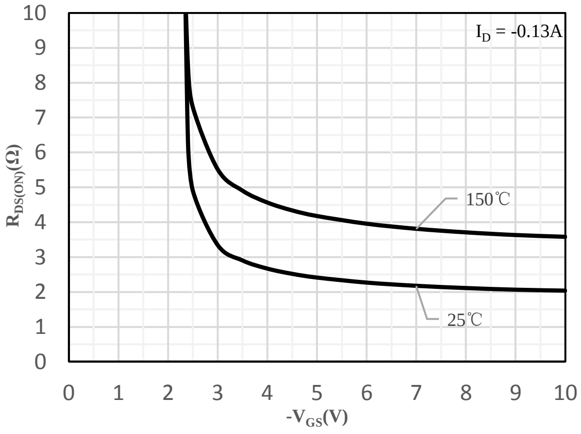


Fig 5 On-Resistance vs. Gate-Source Voltage

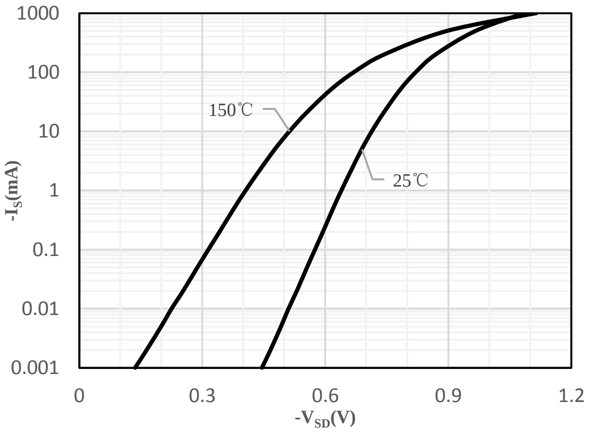
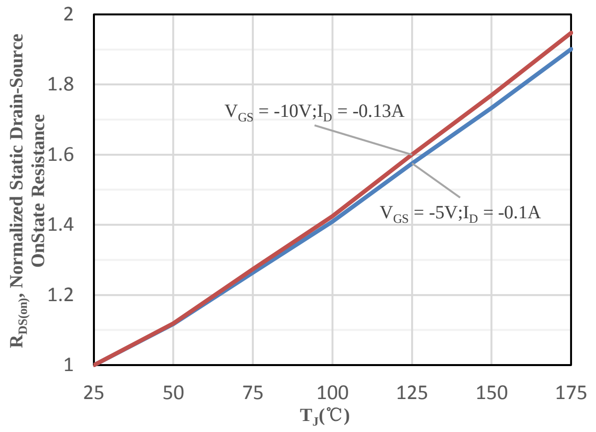


Fig 6 Body-Diode Characteristics



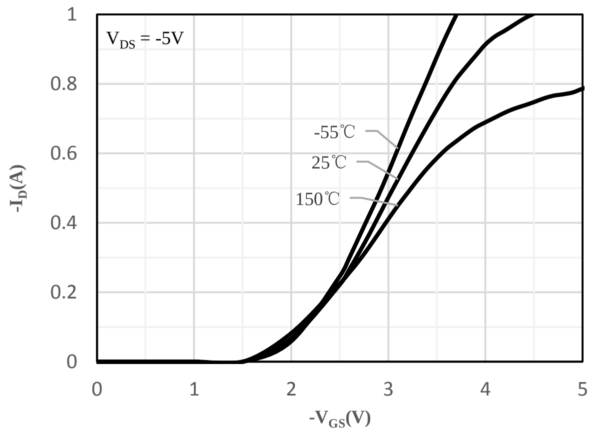
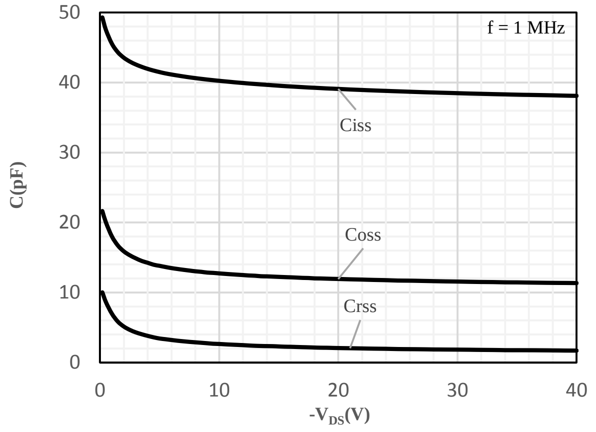


Fig 7 Normalized On-Resistance vs. Junction Temperature

Fig 8 Transfer Characteristics



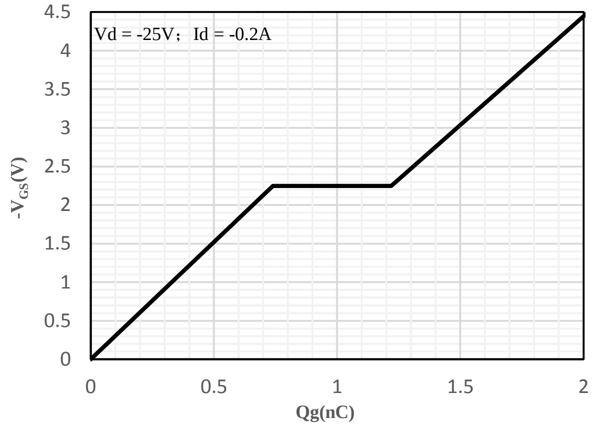
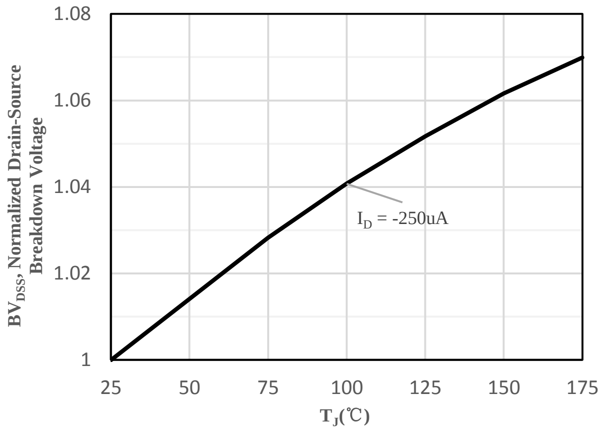


Fig 9 Capacitance Characteristics

Fig 10 Gate-Charge Characteristics



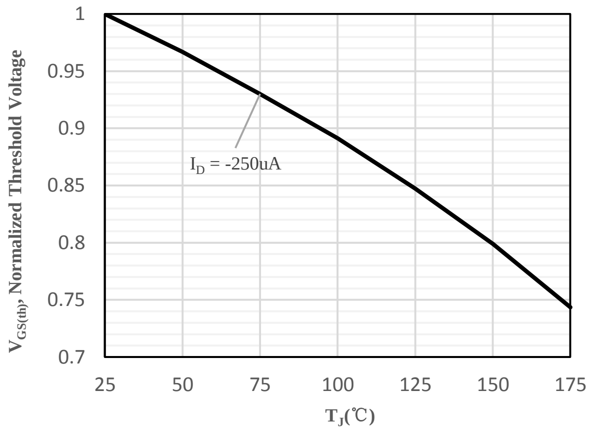
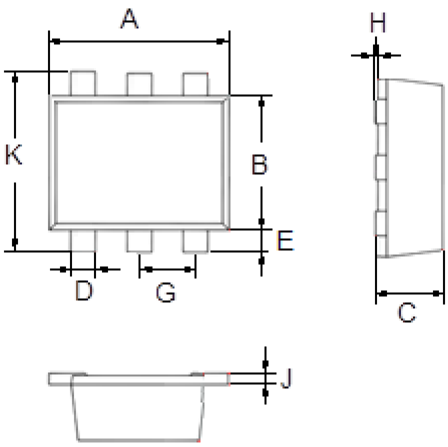


Fig 11 Normalized Breakdown Voltage vs. Junction Temperature

Fig 12 Normalized $V_{GS(th)}$ vs. Junction Temperature

Package Outline Dimensions (Unit: mm)



SOT-563		
Dimension	**Min.**	**Max.**
A	1.500	1.700
B	1.100	1.300
C	0.525	0.600
D	0.170	0.270
E	0.100	0.300
G	0.450	0.550
H	0.000	0.050
J	0.090	0.160
K	1.500	1.700

Mounting Pad Layout (Unit: mm)

SOT-563