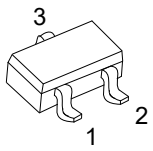
BSS169V

Power MOSFET

N-CHANNEL DEPLETION-MODE SMALL SIGNAL TRANSISTOR



SOT-23
(EIAJ SC-59)

■ DESCRIPTION

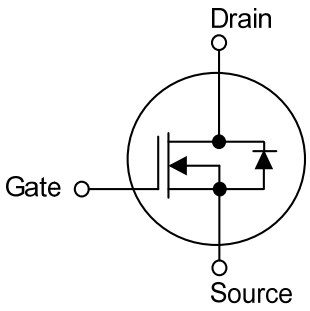
This device employs advanced MOSFET technology and features low gate charge while maintaining low on-resistance.

Optimized for switching applications, this device improves the overall efficiency of DC/DC converters and allows operation to higher switching frequencies.

■ FEATURES

* $R_{DS(ON)} \leq 20\ \Omega$ @ V_{GS}=0V, I_D=0.05A
  $R_{DS(ON)} \leq 10\ \Omega$ @ V_{GS}=10V, I_D=0.2A
* Depletion mode
* dv/dt rated

■ SYMBOL



■ ORDERING INFORMATION

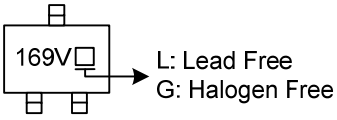
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
BSS169VL-AE3-R	BSS169VG-AE3-R	SOT-23	G	S	D	Tape Reel

Note: Pin Assignment: G: Gate S: Source D: Drain

BSS169VG-AE3-R

(1)Packing Type	(1) R: Tape Reel
(2)Package Type	(2) AE3: SOT-23
(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_A = 25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	100	V
Gate-Source Voltage		V_{GSS}	±25	V
Continuous Drain Current	DC	I_D	0.17	A
	Pulse		0.68	A
Power Dissipation		P_D	0.3	W
Junction Temperature		T_J	+150	°C
Storage Temperature		T_{STG}	-55 ~ +150	°C

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2. Repetitive Rating: Pulse width limited by maximum junction temperature.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	416	°C/W

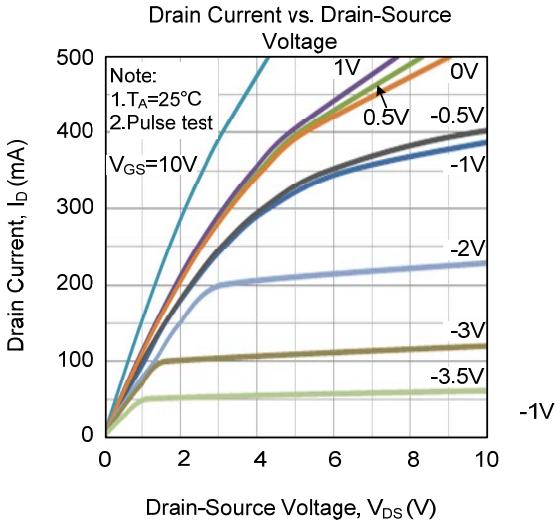
Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

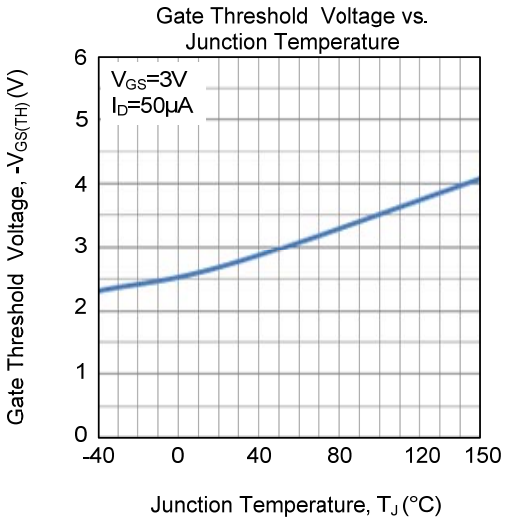
■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

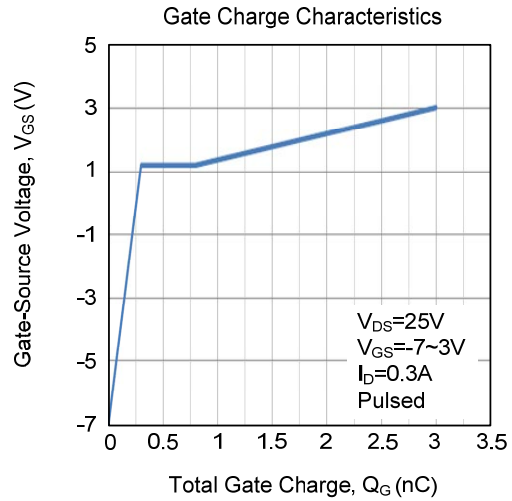
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=-5V, I_D=250μA	100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=5V, V_{GS}=0V	70			mA
Gate–Body Leakage, Forward	I_{GSS}	V_{DS}=0V, V_{GS}=25V			100	nA
Drain-source cutoff current	$I_{D(OFF)}$	V_{DS}=100V, V_{GS}=-10V			1	μA
ON CHARACTERISTICS (Note)						
Gate to Source Cut Off Voltage	$V_{GS(OFF)}$	V_{DS}=3.0V, I_D=50μA	-1.8		-2.9	V
Static Drain–Source On–Resistance	$R_{DS(ON)}$	V_{GS}=0V, I_D=0.05A		13	20	Ω
		V_{GS}=10V, I_D=0.2A		8	10	Ω
Forward Transconductance	g_{FS}	V_{DS}=10V, I_D=0.15A		0.2		S
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{DS}=25V, V_{GS}=-10V, f=1MHz		50		pF
Output Capacitance	C_{OSS}			20		pF
Reverse Transfer Capacitance	C_{RSS}			3		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	V_{DS}=25V, V_{GS}=3 ~ -7V, I_D=0.3A (Note 1, 2)		3		nC
Gate Source Charge	Q_{GS}			0.7		nC
Gate Drain Charge	Q_{GD}			0.4		nC
Turn-ON Delay Time	$t_{D(ON)}$	V_{DD}=30V, V_{GS}=3 ~ -7V, I_D=0.3A, R_G=6Ω (Note 1, 2)		18		ns
Turn-ON Rise Time	t_R			72		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			3		ns
Turn-OFF Fall-Time	t_F			17		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Max. Diode Forward Current	I_S				0.17	A
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=-10V, I_S=0.2A (Note)			1.2	V

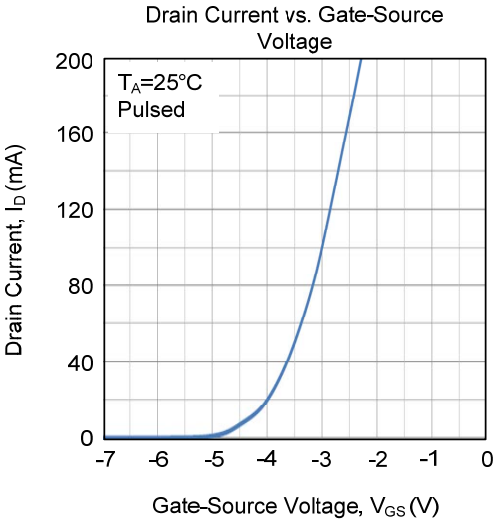
Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.
2. Essentially independent of operating temperature.

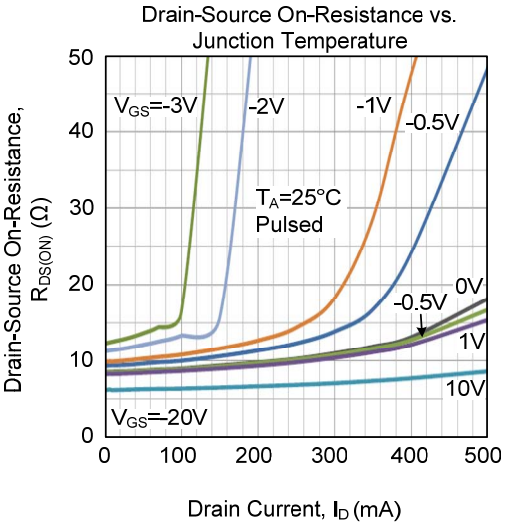
■ TYPICAL CHARACTERISTICS

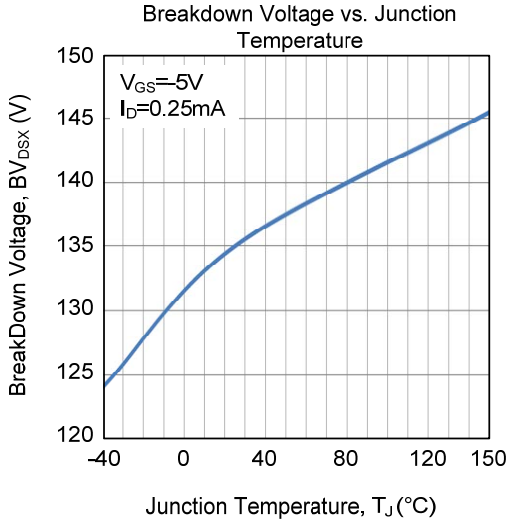












■ TYPICAL CHARACTERISTICS (Cont.)