



BSS169V

Power MOSFET

N-CHANNEL DEPLETION-MODE SMALL SIGNAL TRANSISTOR

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.

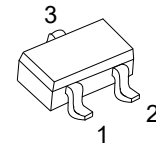
FEATURES

* $R_{DS(ON)} \leq 20 \Omega$ @ $V_{GS}=0V$, $I_D=0.05A$

$R_{DS(ON)} \leq 10 \Omega$ @ $V_{GS}=10V$, $I_D=0.2A$

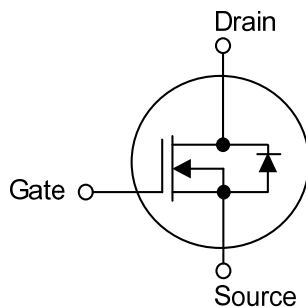
* Depletion mode

* dv/dt rated



SOT-23
(EIAJ SC-59)

SYMBOL



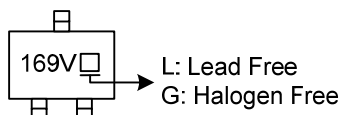
ORDERING INFORMATION

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

<p>BSS169VG-AE3-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) R: Tape Reel (2) AE3: SOT-23 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



■ ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 25	V
Continuous Drain Current	DC	0.17	A
	Pulse	0.68	A
Power Dissipation	P_D	0.3	W
Junction Temperature	T_J	+150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

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	$^\circ\text{C/W}$

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

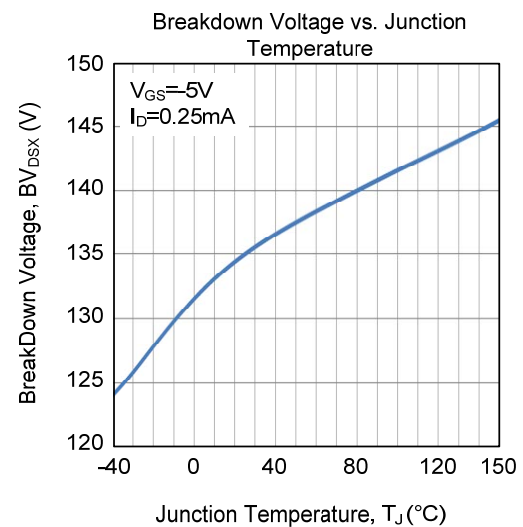
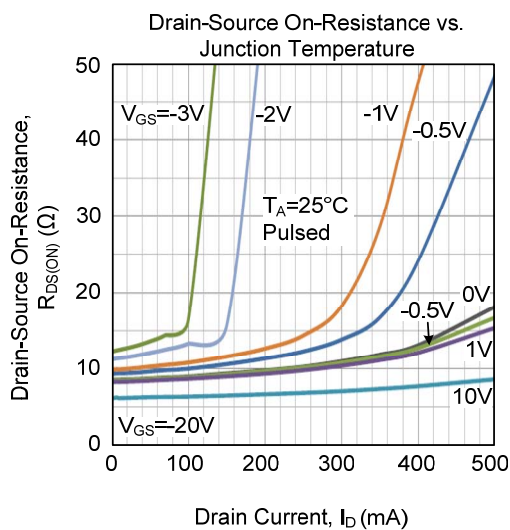
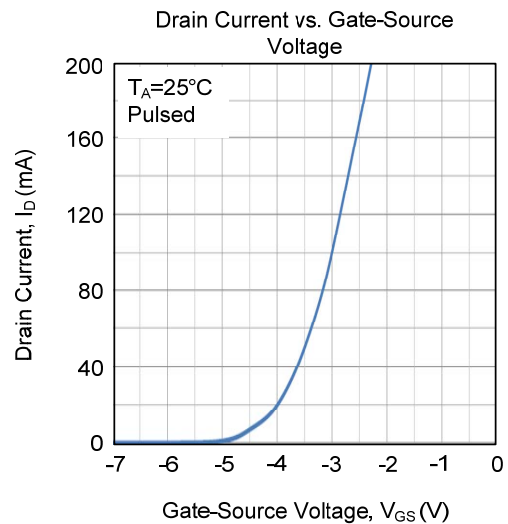
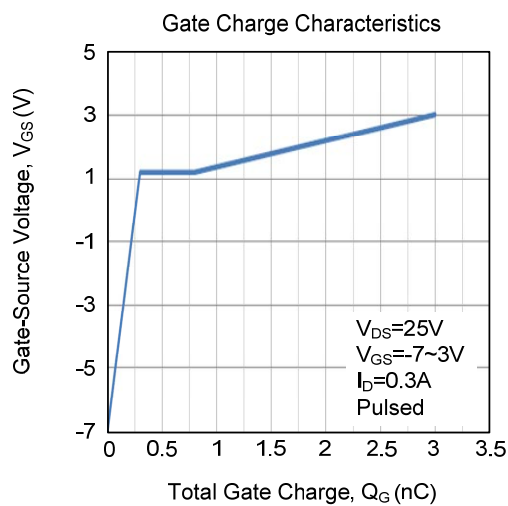
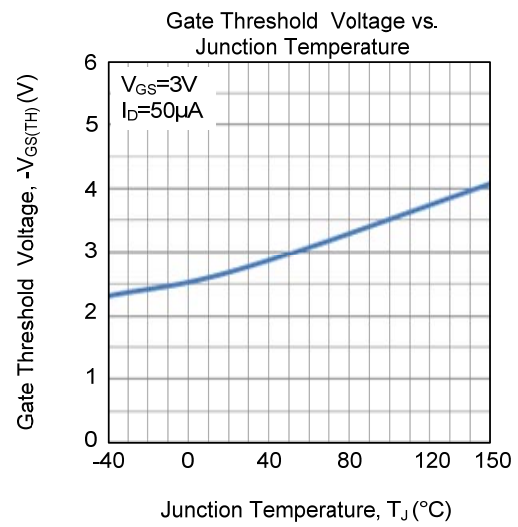
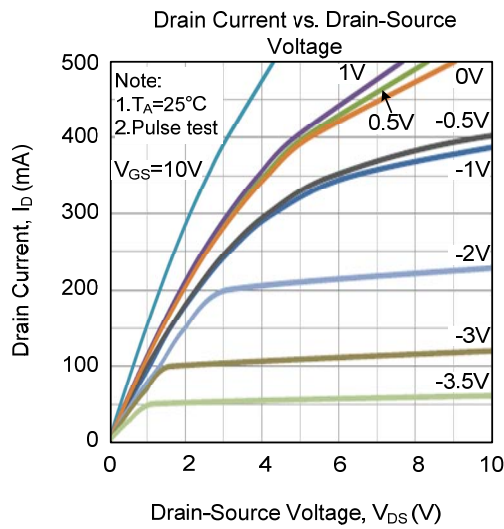
■ ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$, unless otherwise specified)

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

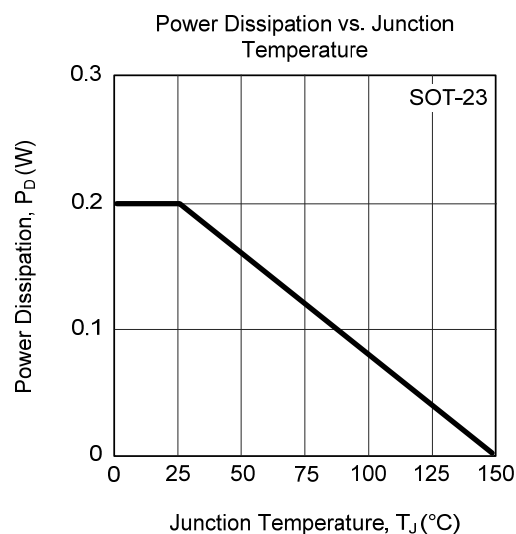
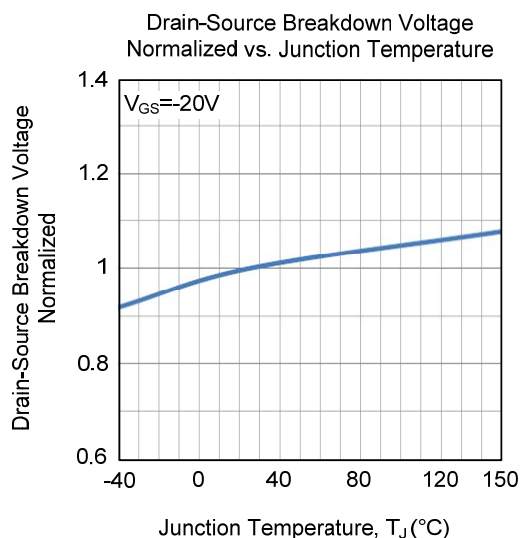
Notes: 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.

2. Essentially independent of operating temperature.

■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



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