



SANYO Semiconductors

## DATA SHEET

An ON Semiconductor Company

# BBS3002 — P-Channel Silicon MOSFET

## General-Purpose Switching Device Applications

### Features

- 4V drive.
- Load switching applications.
- Avalanche resistance guarantee.

### Specifications

Absolute Maximum Ratings at  $T_a=25^\circ\text{C}$ 

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DSS}$		-60	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		-100	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	-400	A
Allowable Power Dissipation	$P_D$	$T_c=25^\circ\text{C}$	90	W
Channel Temperature	$T_{ch}$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$
Avalanche Energy (Single Pulse) *1	$E_{AS}$		340	mJ
Avalanche Current *2	$I_{AV}$		-60	A

Note : \*1  $V_{DD}=-30\text{V}$ ,  $L=100\mu\text{H}$ ,  $I_{AV}=-60\text{A}$ \*2  $L \leq 100\mu\text{H}$ , Single pulseElectrical Characteristics at  $T_a=25^\circ\text{C}$ 

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=-1\text{mA}$ , $V_{GS}=0\text{V}$	-60			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-60\text{V}$ , $V_{GS}=0\text{V}$			-1	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 16\text{V}$ , $V_{DS}=0\text{V}$			$\pm 10$	$\mu\text{A}$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=-10\text{V}$ , $I_D=-1\text{mA}$	-1.2		-2.6	V

Marking : BS3002

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# BBS3002

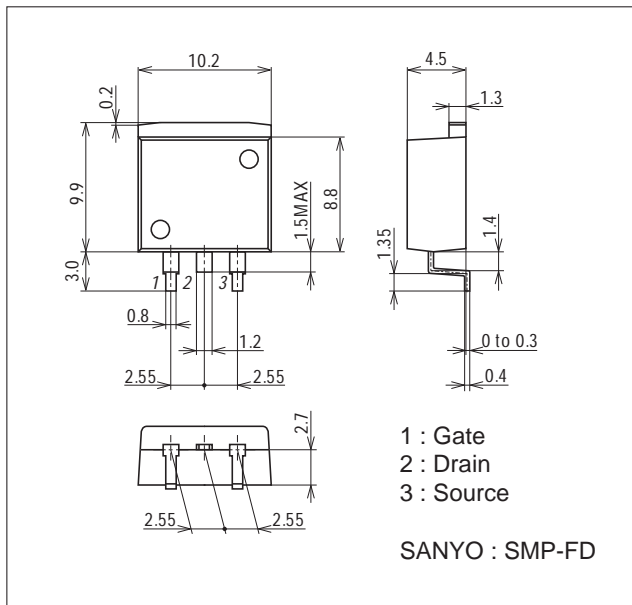
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=-10V, I_D=-50A$	54	90		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=-50A, V_{GS}=-10V$		4.4	5.8	$m\Omega$
	$R_{DS(on)2}$	$I_D=-50A, V_{GS}=-4V$		6.4	9.0	$m\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=-20V, f=1MHz$		13200		$\mu F$
Output Capacitance	$C_{oss}$	$V_{DS}=-20V, f=1MHz$		1300		$\mu F$
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=-20V, f=1MHz$		950		$\mu F$
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		95		ns
Rise Time	$t_r$	See specified Test Circuit.		1000		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		800		ns
Fall Time	$t_f$	See specified Test Circuit.		820		ns
Total Gate Charge	$Q_g$	$V_{DS}=-30V, V_{GS}=-10V, I_D=-100A$		280		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=-30V, V_{GS}=-10V, I_D=-100A$		50		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=-30V, V_{GS}=-10V, I_D=-100A$		55		nC
Diode Forward Voltage	$V_{SD}$	$I_S=-100A, V_{GS}=0V$		-1.0	-1.5	V

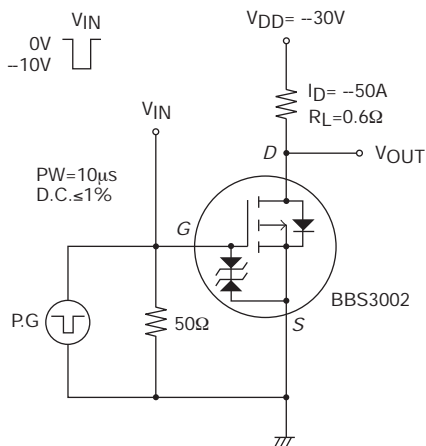
## Package Dimensions

unit : mm (typ)

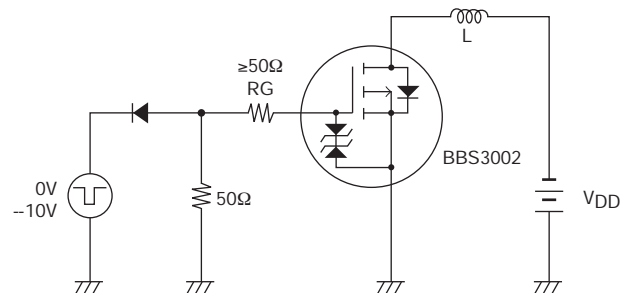
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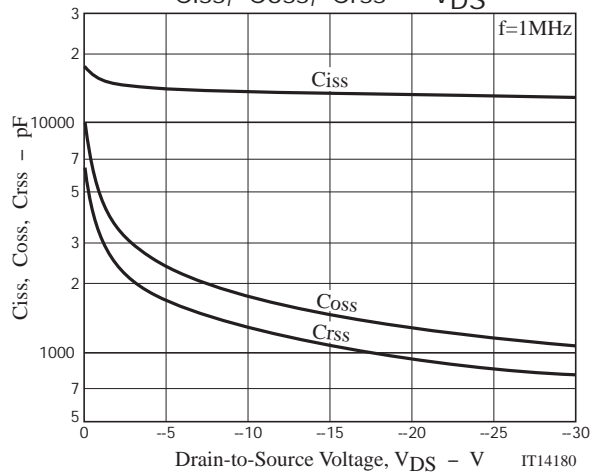
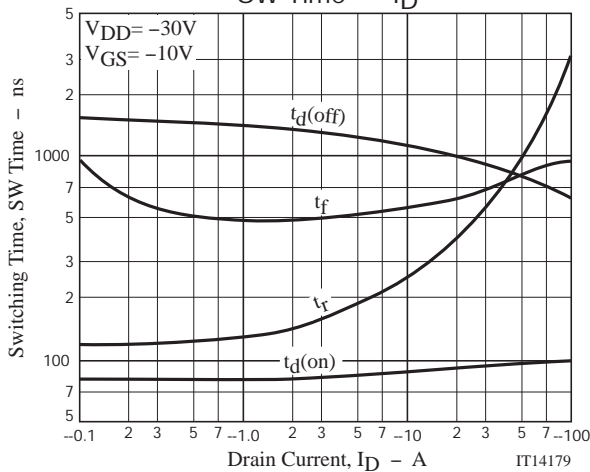
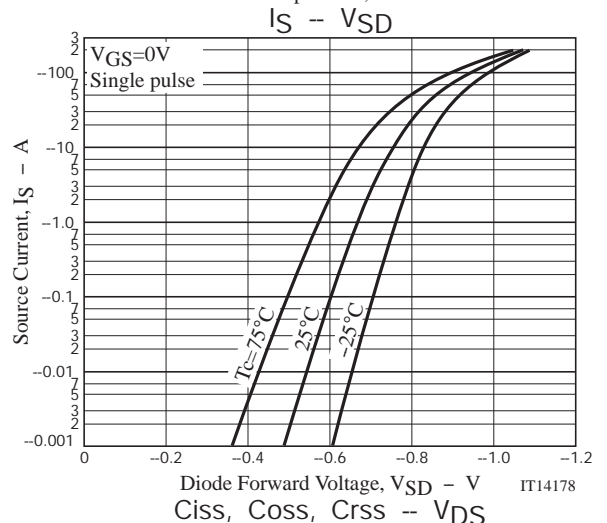
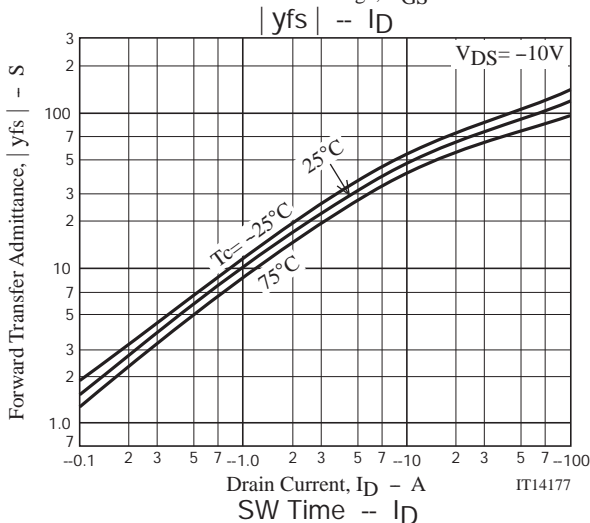
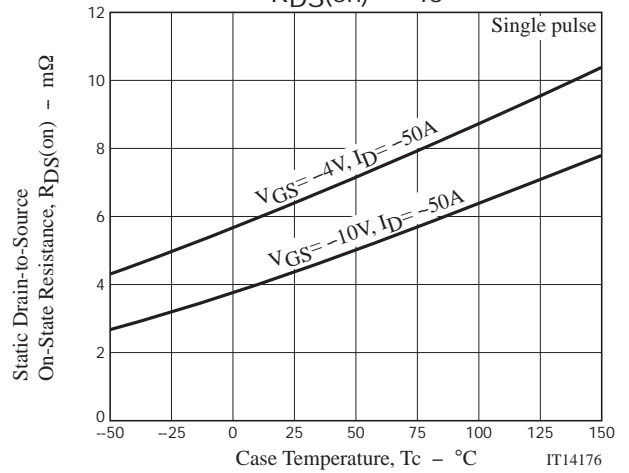
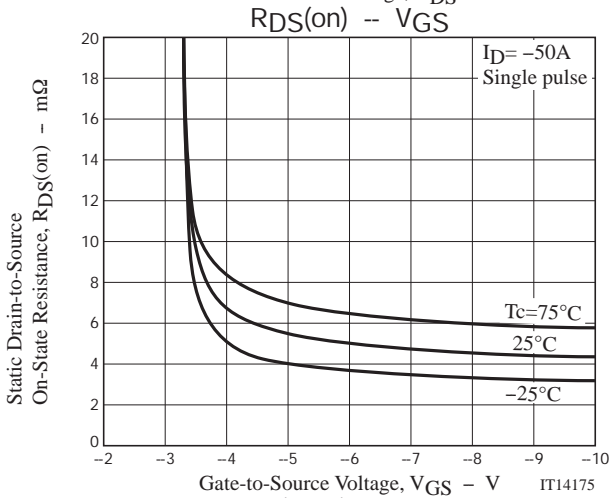
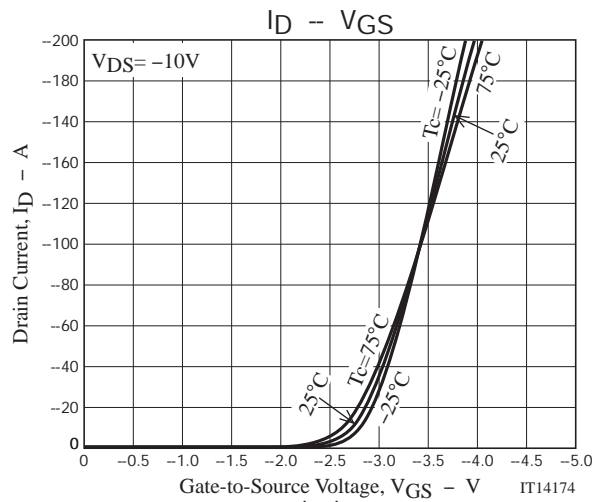
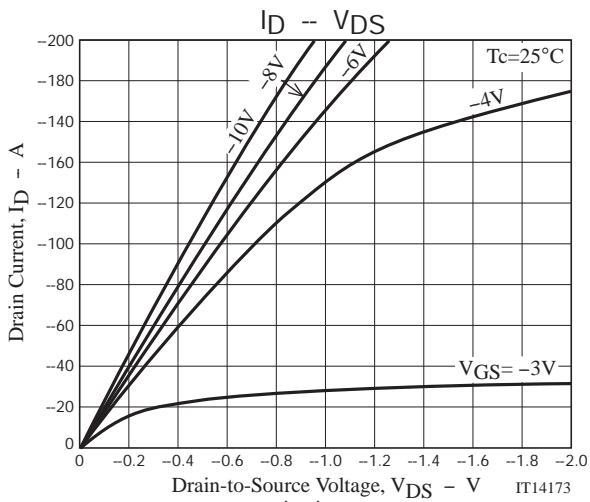


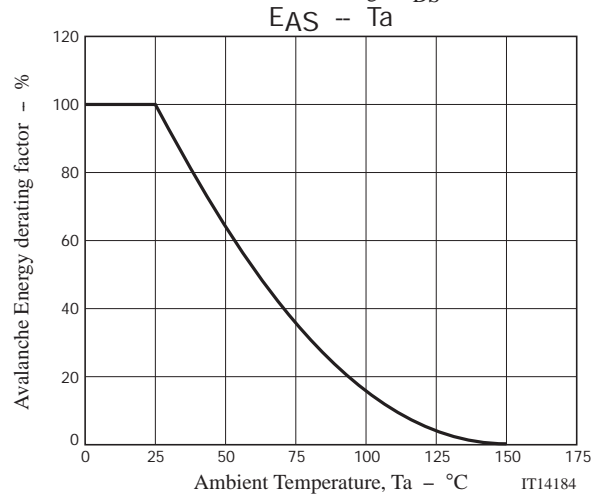
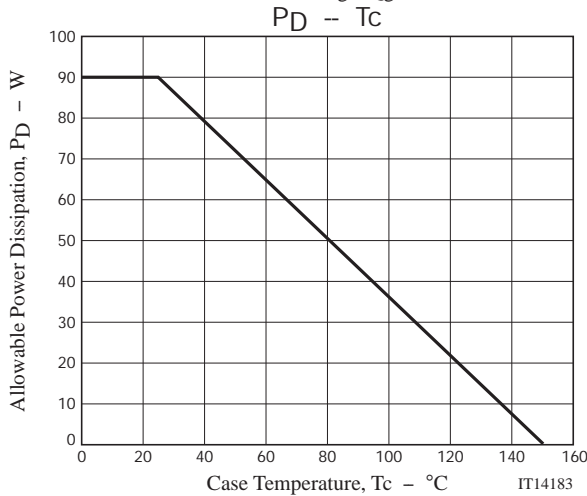
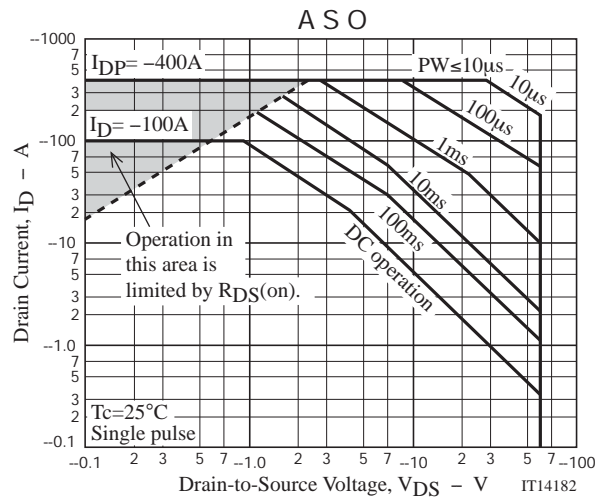
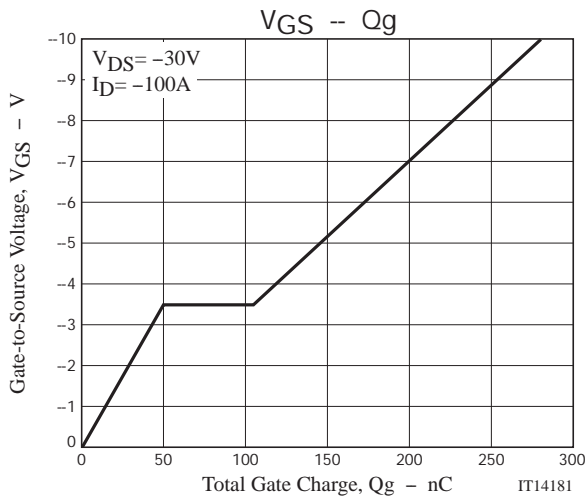
## Switching Time Test Circuit



## Avalanche Resistance Test Circuit







Note on usage : Since the BBS3002 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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