



BBS3002

P-Channel Power MOSFET -60V, -100A, 5.8mΩ, TO-263-2L/TO-263

ON Semiconductor®

<http://onsemi.com>

TO-263

Features

- ON-resistance $R_{DS(on)1}=4.4\text{m}\Omega$ (typ.)
- Input capacitance $C_{iss}=13200\text{pF}$ (typ.)
- 4V drive

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}		± 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 $V_{DD}=-30\text{V}$, $L=100\mu\text{H}$, $I_{AV}=-60\text{A}$ (Fig.1)*2 $L \leq 100\mu\text{H}$, Single pulse

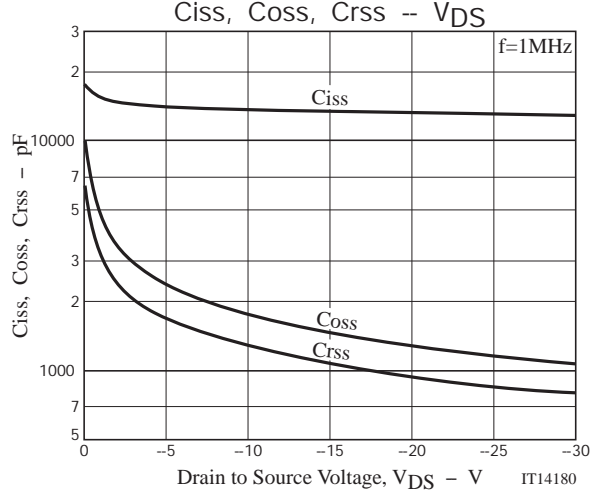
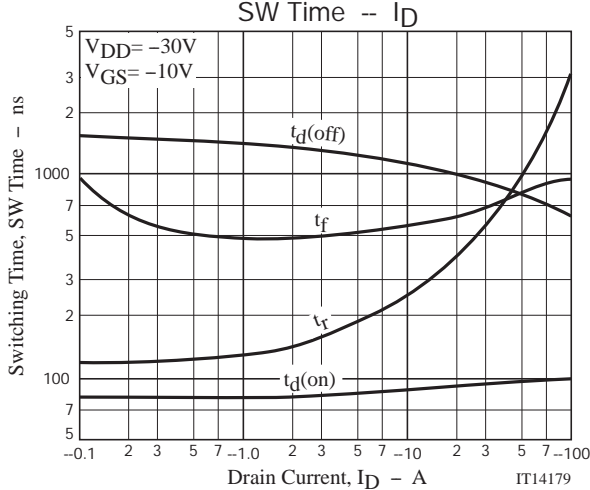
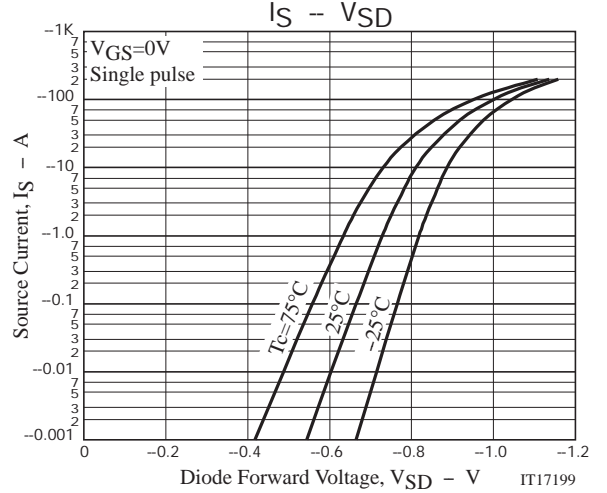
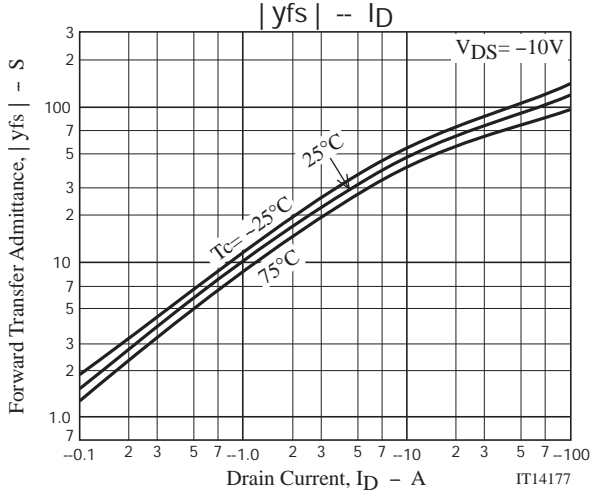
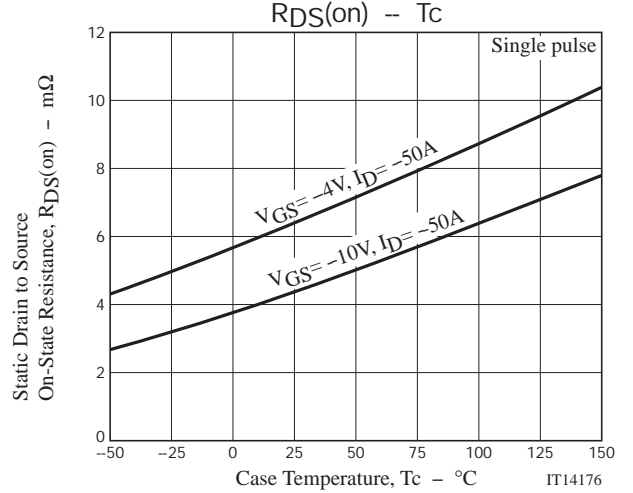
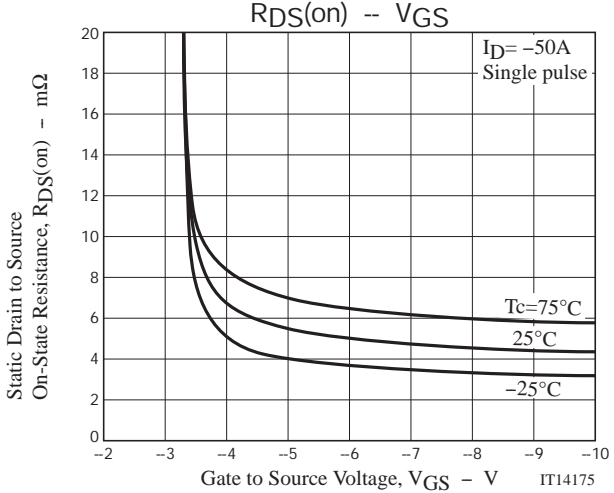
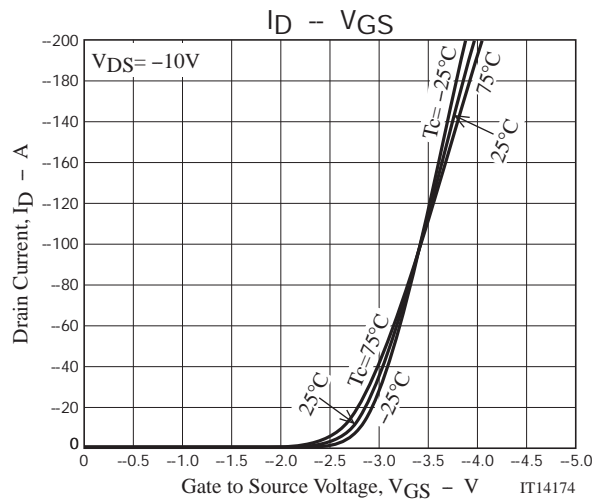
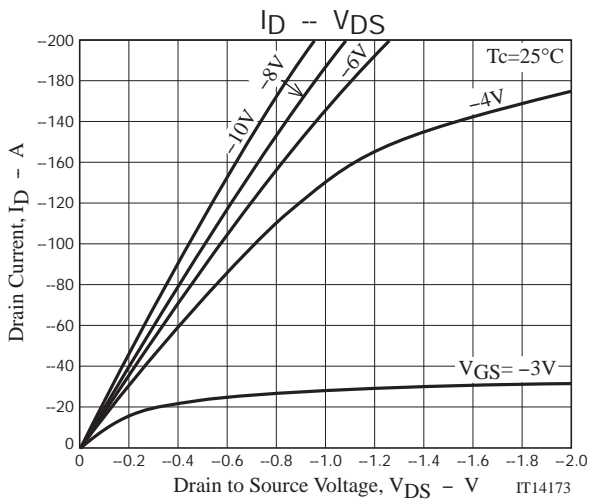
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

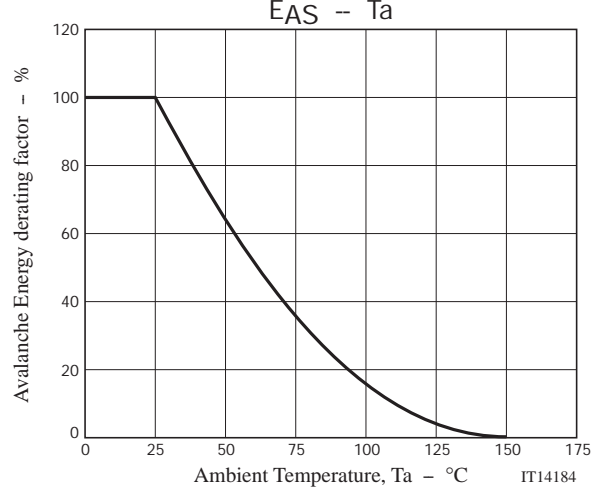
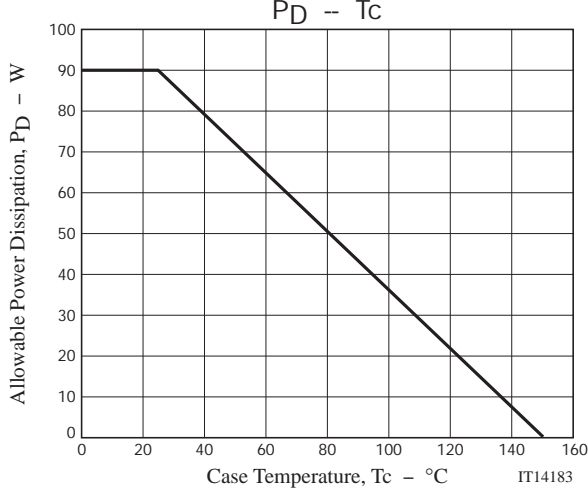
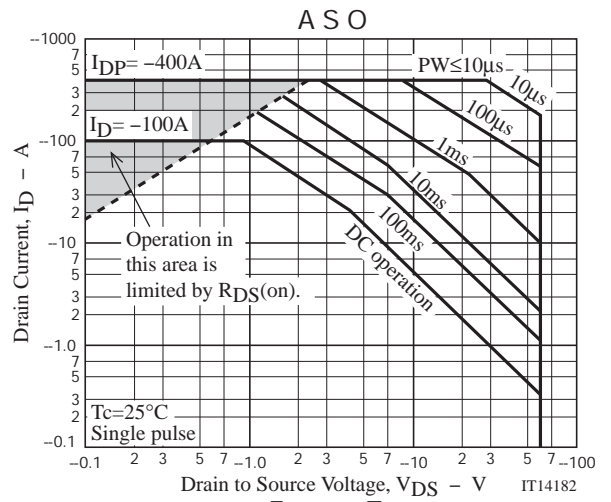
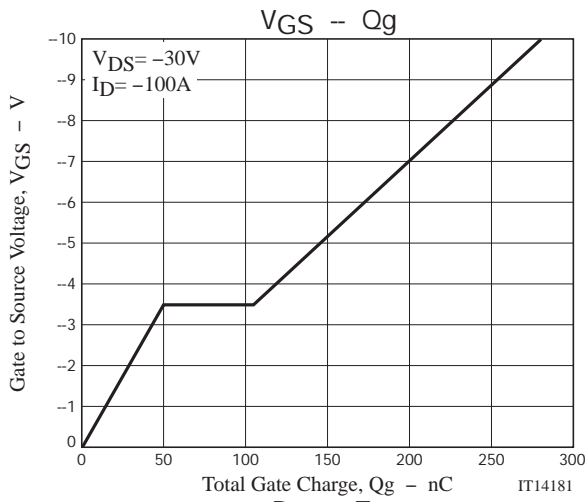
Electrical Characteristics at $T_a=25^\circ\text{C}$

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	μA
Gate to Source Leakage Current	I_{GSS}	$V_{GS}=\pm 16\text{V}$, $V_{DS}=0\text{V}$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=-10\text{V}$, $I_D=-1\text{mA}$	-1.2		-2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=-10\text{V}$, $I_D=-50\text{A}$	54	90		S
Static Drain to Source On-State Resistance	$R_{DS(on)1}$	$I_D=-50\text{A}$, $V_{GS}=-10\text{V}$		4.4	5.8	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=-50\text{A}$, $V_{GS}=-4\text{V}$		6.4	9.0	$\text{m}\Omega$
Input Capacitance	C_{iss}			13200		pF
Output Capacitance	C_{oss}	$V_{DS}=-20\text{V}$, $f=1\text{MHz}$		1300		pF
Reverse Transfer Capacitance	C_{rss}			950		pF
Turn-ON Delay Time	$t_d(on)$	See Fig.2		95		ns
Rise Time	t_r			1000		ns
Turn-OFF Delay Time	$t_d(off)$			800		ns
Fall Time	t_f			820		ns
Total Gate Charge	Q_g				280	
Gate to Source Charge	Q_{gs}	$V_{DS}=-30\text{V}$, $V_{GS}=-10\text{V}$, $I_D=-100\text{A}$		50		nC
Gate to Drain "Miller" Charge	Q_{gd}			55		nC
Diode Forward Voltage	V_{SD}	$I_S=-100\text{A}$, $V_{GS}=0\text{V}$	-1.0		-1.5	V

ORDERING INFORMATION

See detailed ordering and shipping information on page 6 of this data sheet.





Package Dimensions

BBS3002-DL-1E

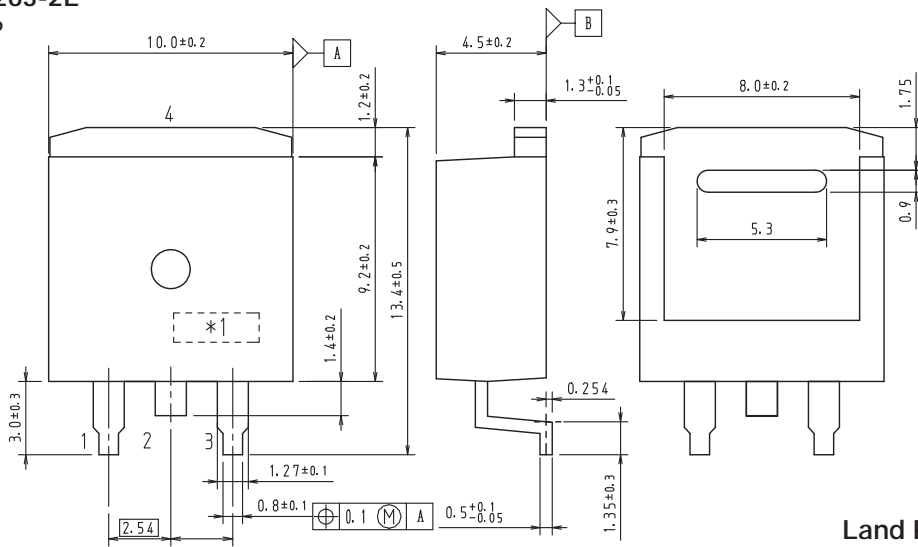
D2PAK/TO-263-2L

CASE 418AP

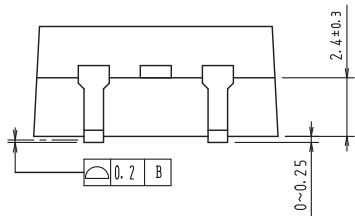
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Unit : mm

- 1: Gate
- 2: Drain
- 3: Source
- 4: Drain

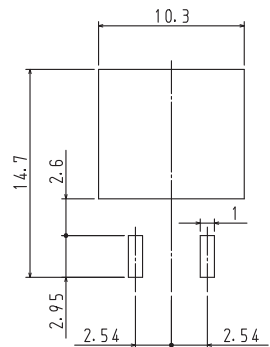


Land Pattern Example

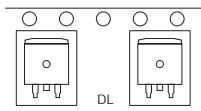


- 1. These dimension do not include mold protrusion
- 2. Pin2 is idle pin with electrical designation only carried

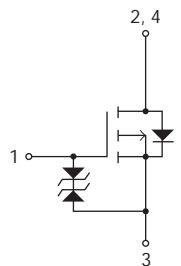
*1: Lot indication



Packing Type: DL



Electrical Connection

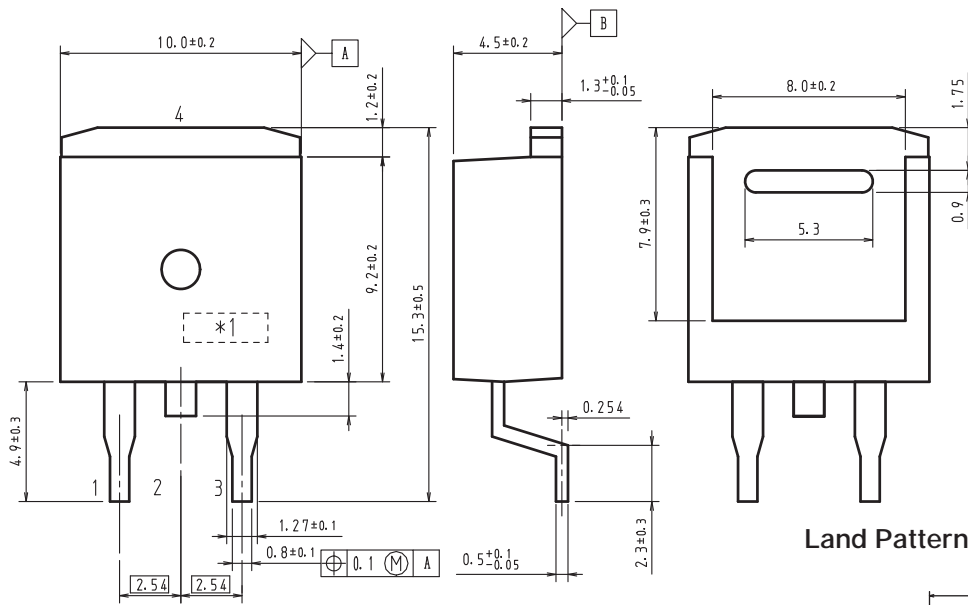


Package Dimensions

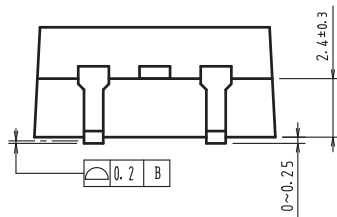
BBS3002-TL-1E

Unit : mm

- 1: Gate
- 2: Drain
- 3: Source
- 4: Drain

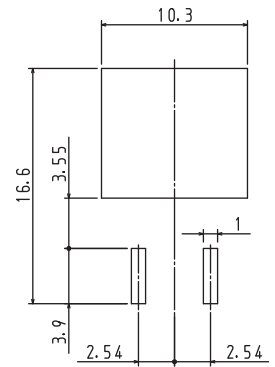


Land Pattern Example

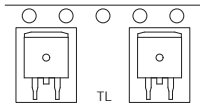


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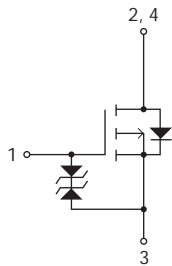
*1: Lot indication



Packing Type: TL



Electrical Connection



Ordering & Package Information

Device	Package	Shipping	memo
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BBS3002-TL-1E	TO-263		

Marking

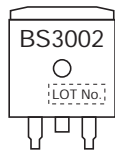


Fig.1 Unclamped Inductive Switching Test Circuit

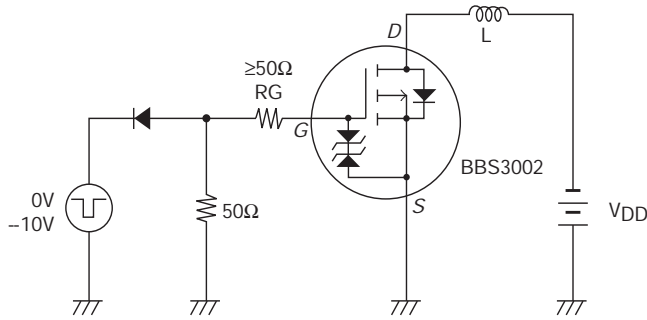
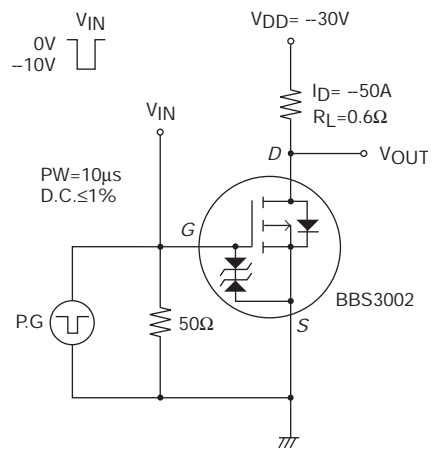


Fig.2 Switching Time Test Circuit



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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