



# BMD80N900E2

## Super Junction Power MOSFET

800 V, 6 A, 900 mΩ

### Description

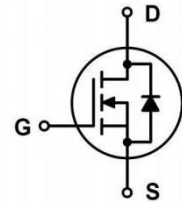
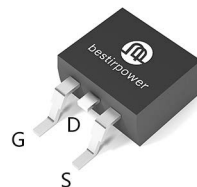
BMD65N340E2 is power MOSFET using bestirpower's advanced super junction technology that can realize very low on-resistance and gate charge.

It will provide much high efficiency by using optimized charge coupling technology. These user friendly devices give an advantage of Low EMI to designers as well as low switching loss.

$BV_{DSS} @ T_{J,max}$	$I_D$	$R_{DS(on),max}$	$Q_{g,typ}$
850 V	6 A	900 mΩ	13 nC

### Applications

- Switch Mode Power Supply (SMPS)
- Uninterruptible Power Supply (UPS)
- Power Factor Correction (PFC)
- Low Power Chargers and Adapters



### Features

- Very low FOM  $R_{DS(on)} \times Q_g$
- 100% avalanche tested
- Easy to use/drive
- RoHS compliant



### Absolute Maximum Ratings ( $T_J = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter		Value	Unit	Note
$V_{DSS}$	Drain to Source Voltage		800	V	
$V_{GSS}$	Gate to Source Voltage		$\pm 30$	V	
$I_D$	Drain Current (continuous)	$V_{GS}=10\text{V}, T_C = 25^\circ\text{C}$	6	A	Fig 1
		$V_{GS}=10\text{V}, T_C = 100^\circ\text{C}$	3.6		
$I_{DM}$	Drain Current	Pulsed (Note1)	18	A	
$E_{AS}$	Single Pulsed Avalanche Energy (Note2)		62	mJ	
$I_{AR}$	Avalanche Current (Note2)		1.3	A	
dv/dt	MOSFET dv/dt		50	V/ns	
	Peak Diode Recovery dv/dt (Note3)		15		
$P_D$	Power Dissipation	( $T_C = 25^\circ\text{C}$ )	63	W	
$E_{AS}$	Repetitive Avalanche Energy		0.21	mJ	
$T_J, T_{STG}$	Operating and Storage Temperature Range		-55 to 150	$^\circ\text{C}$	

### Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case, Max.	2.0	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient, Max.	62	
$T_{sold}$	Soldering temperature, wave soldering only allowed at leads	260	$^\circ\text{C}$

**Electrical Characteristics** ( $T_J = 25^\circ\text{C}$  unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit	Note
--------	-----------	-----------------	-----	-----	-----	------	------

**Off Characteristics**

$BV_{DSS}$	Drain to Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$	800	-	-	V	Fig 8
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS} = 800\text{ V}, V_{GS} = 0\text{ V}$	-	-	1	$\mu\text{A}$	
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS} = \pm 30\text{ V}$	-	-	$\pm 100$	nA	

**On Characteristics**

$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS} = V_{DS}, I_D = 250\ \mu\text{A}$	2.5	3.0	4.5	V	Fig 2
$R_{DS(on)}$	Static Drain to Source On Resistance	$V_{GS} = 10\text{ V}, I_D = 3\text{ A}, T_J = 25^\circ\text{C}$	-	790	900	mΩ	Fig 3

**Dynamic Characteristics**

$C_{iss}$	Input Capacitance	$V_{DS} = 100\text{ V}, V_{GS} = 0$ $V, f = 1\text{ MHz}$	-	528.6	-	pF	Fig 4
$C_{oss}$	Output Capacitance		-	16	-	pF	
$C_{rss}$	Reverse transfer capacitance		-	0.31	-	pF	
$Q_{g(tot)}$	Total Gate Charge at 10 V	$V_{DS} = 640\text{ V},$ $I_D = 6\text{ A},$ $V_{GS} = 10\text{ V}$	-	13	-	nC	Fig 5
$Q_{gs}$	Gate to Source Charge		-	2.8	-	nC	
$Q_{gd}$	Gate to Drain "Miller" Charge		-	5.6	-	nC	
$R_G$	Gate Resistance	$f = 1\text{ MHz}, \text{Open Drain}$	-	7.8	-	Ω	

**Switching Characteristics**

$t_{d(on)}$	Turn-On Delay Time	$V_{DS} = 400\text{ V},$ $I_D = 6\text{ A},$ $R_G = 25\ \Omega$	-	41	-	ns	
$t_r$	Turn-On Rise Time		-	11	-	ns	
$t_{d(off)}$	Turn-Off Delay Time		-	75	-	ns	
$t_f$	Turn-Off Fall Time		-	37	-	ns	

**Source-Drain Diode Characteristics**

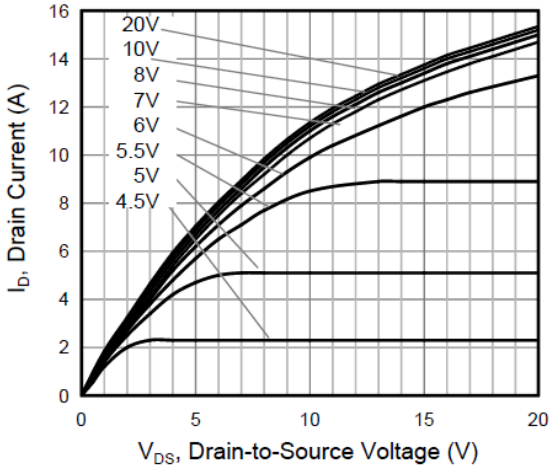
$V_{SD}$	Diode Forward Voltage	$T_J = 25^\circ\text{C}, I_{SD} = 3\text{ A}, V_{GS} = 0\text{ V}$	-	0.9	1.2	V	
$I_{mm}$	Peak Reverse Recovery Current	$V_R = 400\text{ V}, I_F = 6\text{ A}$ $diF/dt = 100\text{ A}/\mu\text{s}$	-	11.7	-	A	
$t_{rr}$	Reverse Recovery Time		-	345	-	ns	
$Q_{rr}$	Reverse Recovery Charge		-	2.5	-	$\mu\text{C}$	

※Notes:

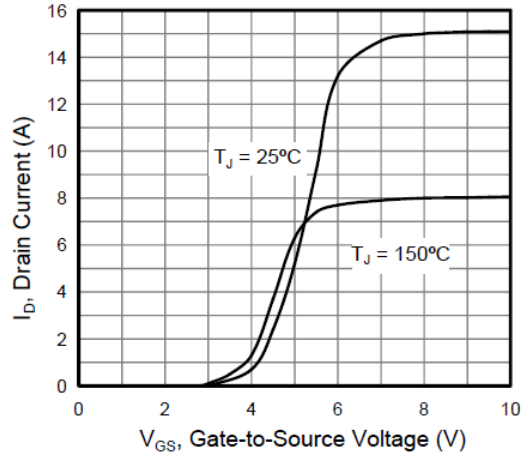
1. Repetitive rating: pulse-width limited by maximum junction temperature.
2.  $L=10\text{mH}, R_G = 25\ \Omega$ , starting  $T_J = 25^\circ\text{C}$ .
3. Identical low side and high side switch with identical  $R_G$

### Typical Performance Characteristics

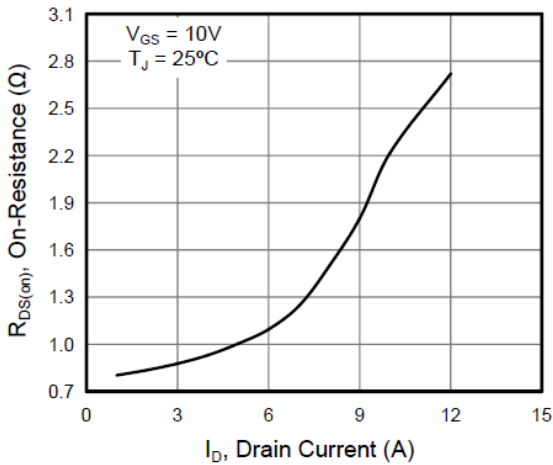
**Figure 1. On-Region Characteristics**



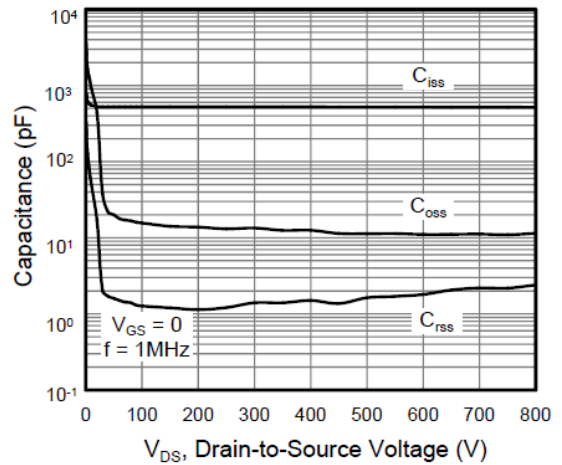
**Figure 2. Transfer Characteristics**



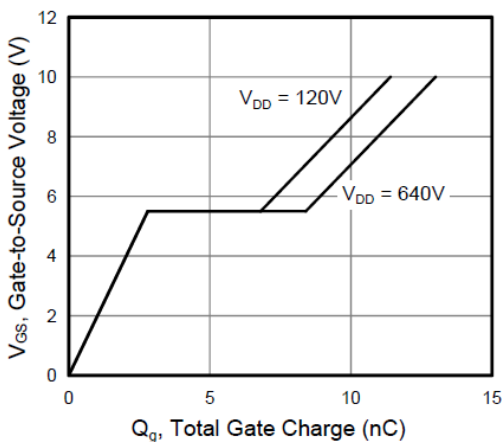
**Figure 3. On-Resistance vs. Drain Current**



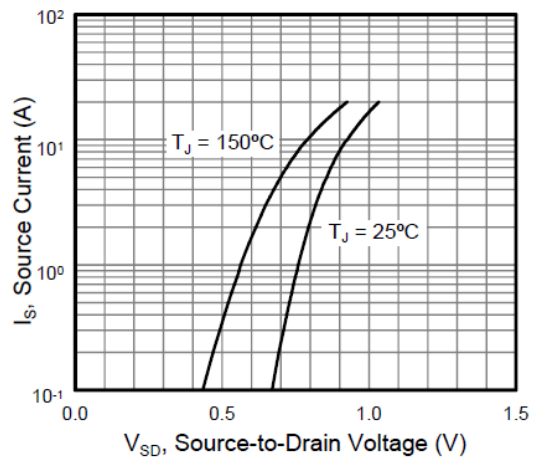
**Figure 4. Capacitance**



**Figure 5. Gate Charge**

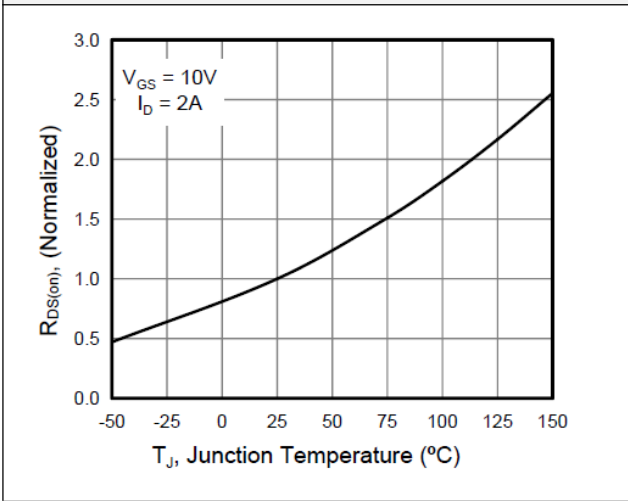


**Figure 6. Body Diode Forward Voltage**

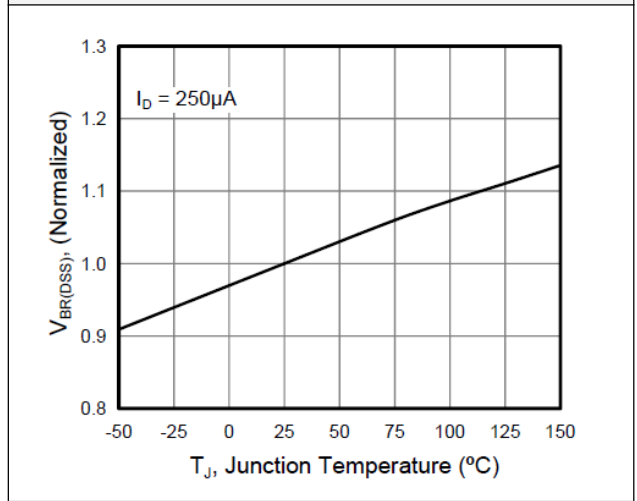


### Typical Performance Characteristics

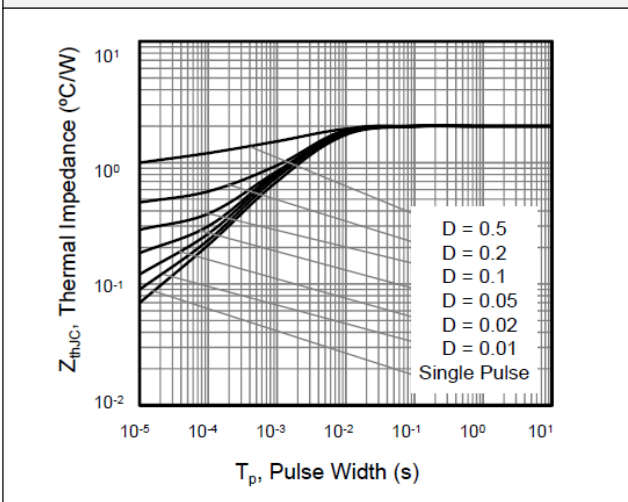
**Figure 7. On-Resistance vs. Temperature**



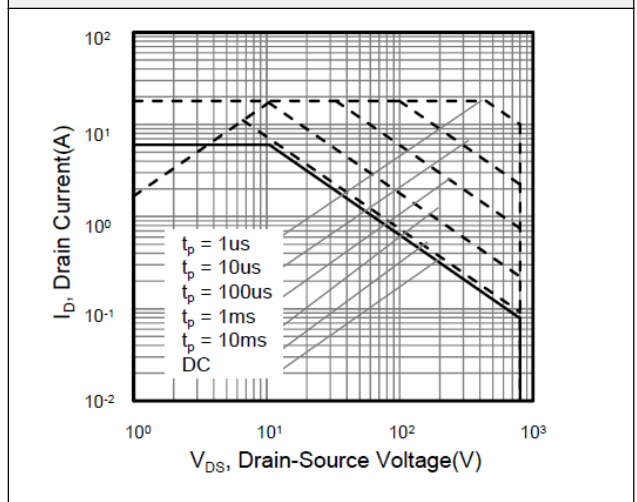
**Figure 8. Breakdown Voltage vs. Junction Temperature**



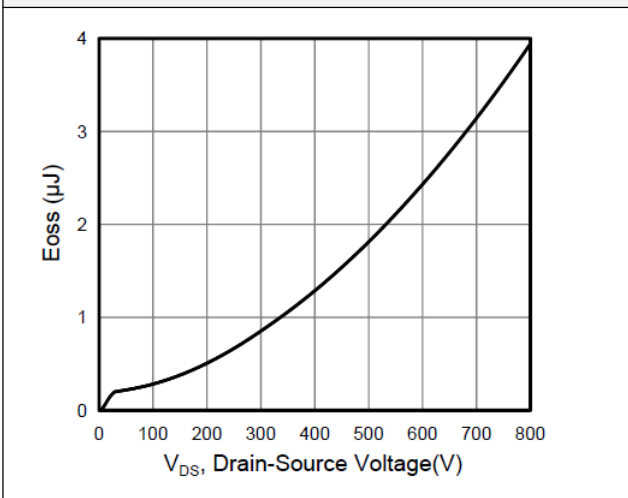
**Figure 9. Transient Thermal Impedance**



**Figure 10. Safe Operation Area**

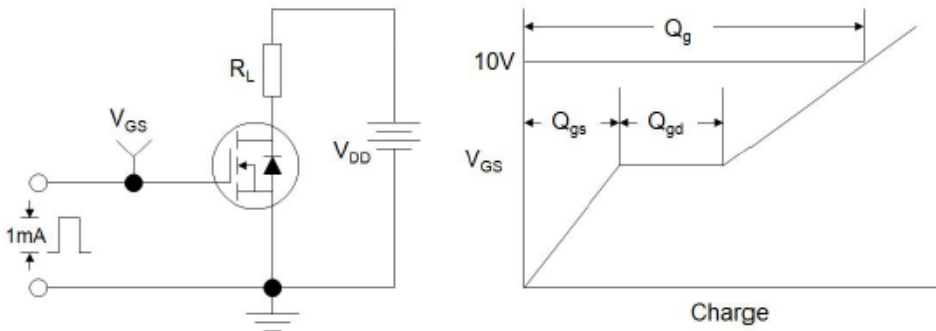


**Figure 11. Typ. Coss Stored Energy**

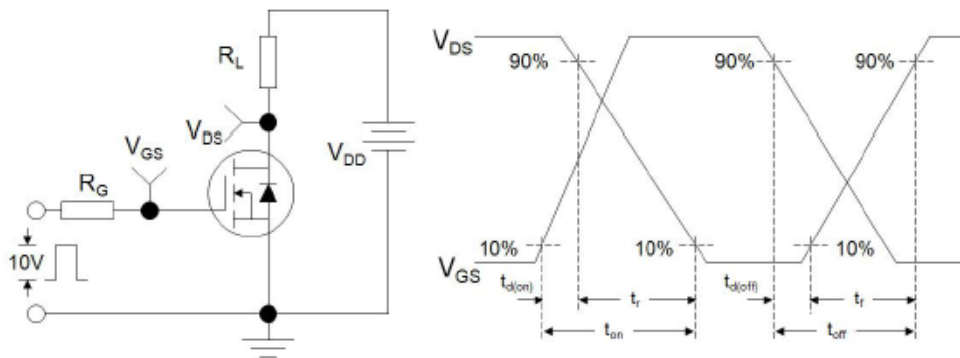


### Test Circuits

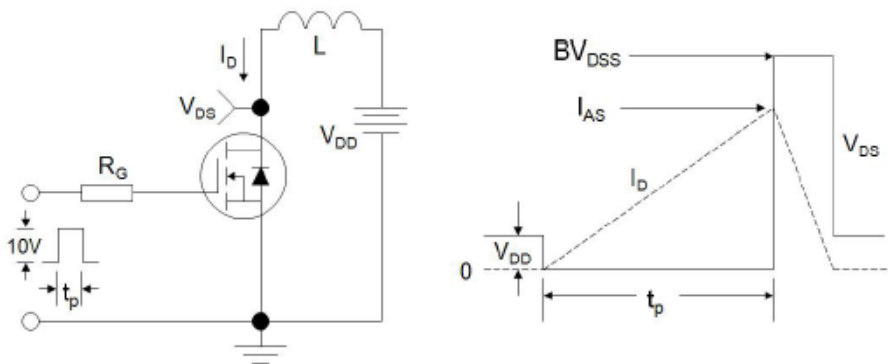
**Figure 12: Gate Charge Test Circuit and Waveform**



**Figure 13: Resistive Switching Test Circuit and Waveform**

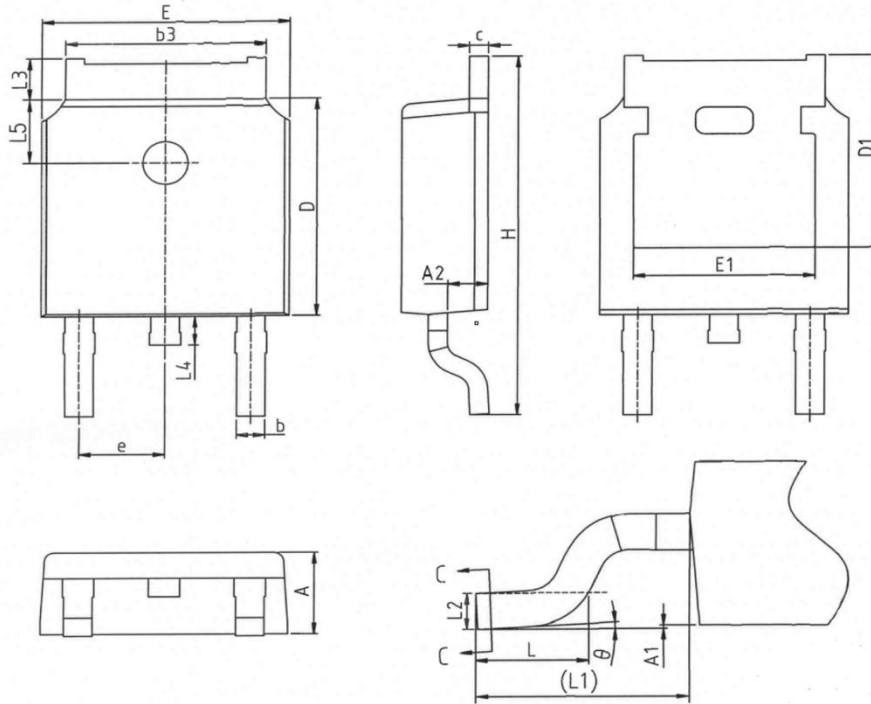


**Figure 14: Unclamped Inductive Switching Test Circuit and Waveform**



## Package Outlines

# DPAK



COMMON DIMENSIONS

SYMBOL	mm		
	MIN	NOM	MAX
A	2.20	2.30	2.38
A1	0.00	-	0.12
A2	0.97	1.07	1.17
b	0.68	0.78	0.90
b3	5.20	5.33	5.46
c	0.43	0.53	0.61
D	5.98	6.10	6.22
D1	5.30REF		
E	6.40	6.60	6.73
E1	4.63	-	-
e	2.286BSC		
H	9.40	10.10	10.50
L	1.38	1.50	1.75
L1	2.90REF		
L2	0.51BSC		
L3	0.88	-	1.28
L4	0.50	-	1.00
L5	1.65	1.80	1.95
θ	0°	-	8°

\* Dimensions in millimeters

## Package Marking and Ordering Information

Part Number	Top Marking	Package	Packing Method	Quantity
BMD80N900E2	BMD80N900E2	DPAK	Tape & Reel	2500 units

## Disclaimer

Bestirpower reserve the right to make changes, corrections, enhancements, modifications, and improvements to Bestirpower products and/or to this document at any time without notice.

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. Bestirpower does not assume any liability for infringement of patents, copyrights, or other intellectual property rights of third parties by or arising from the use of Products or technical information described in this document.

This document is the property of Bestirpower Co., LTD., and not allowed to copy or transformed to other format if not under the authority approval.

© 2025 bestirpower – All rights reserved