



Features

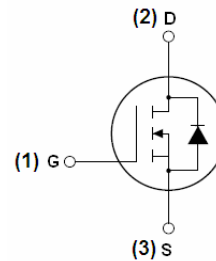
- Advanced Trench Technology
- Provide Excellent $R_{DS(on)}$ and Low Gate Charge

Application

- Load Switch
- PWM Application

Product Summary

V_{DS}	30	V
$R_{DS(on),TYP} @ V_{GS}=10\text{ V}$	5.0	m Ω
I_D	80	A



Absolute Maximum Ratings ($T_C=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate-Source Voltage		± 20	V
I_D	Continuous Drain Current	$T_C = 25^\circ\text{C}$	80	A
		$T_C = 100^\circ\text{C}$	50	A
I_{DM}	Pulsed Drain Current ^{note1}		320	A
E_{AS}	Single Pulsed Avalanche Energy ^{note2}		88	mJ
P_D	Power Dissipation	$T_C = 25^\circ\text{C}$	75	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		1.68	$^\circ\text{C/W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient		62	
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +175	$^\circ\text{C}$

Electrical Characteristics ($T_C=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V,I _D =250μA	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =30V, V _{GS} = 0V, T _J =25°C	-	-	1	uA
		V _{DS} =24V, V _{GS} = 0V, T _J =125°C	-	-	10	
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V,V _{GS} = ±20V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D =250μA	1.0	1.6	2.5	V
R _{DS(on)}	Static Drain-Source on-Resistance <small>note3</small>	V _{GS} =10V, I _D =20A	-	5.0	6	mΩ
		V _{GS} =4.5V, I _D =10A	-	6.8	12	
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =10A	-	20	-	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f = 1.0MHz	-	1914	-	pF
C _{oss}	Output Capacitance		-	270	-	pF
C _{rss}	Reverse Transfer Capacitance		-	218	-	pF
Q _g	Total Gate Charge	V _{DS} =15V, I _D =20A, V _{GS} =4.5V	-	11.1	-	nC
Q _{gs}	Gate-Source Charge		-	1.85	-	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	6.8	-	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DS} =15V, I _D =15A, R _G =3.3Ω, V _{GS} =10V	-	7.5	-	ns
t _r	Turn-on Rise Time		-	14.5	-	ns
t _{d(off)}	Turn-off Delay Time		-	35.2	-	ns
t _f	Turn-off Fall Time		-	9.6	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I _s	Maximum Continuous Drain to Source Diode Forward Current		-	-	80	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	320	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _s =30A	-	-	1.2	V
t _{rr}	Body Diode Reverse Recovery Time	I _s =30A,dI/dt=100A/μs	-	32	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	12	-	nC

Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition: $T_J=25^{\circ}\text{C}, V_{DD}=25V, V_{GS}=10V, L=0.1\text{mH}, I_{AS}=42A, R_G=25\Omega$

3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

Typical Performance Characteristics

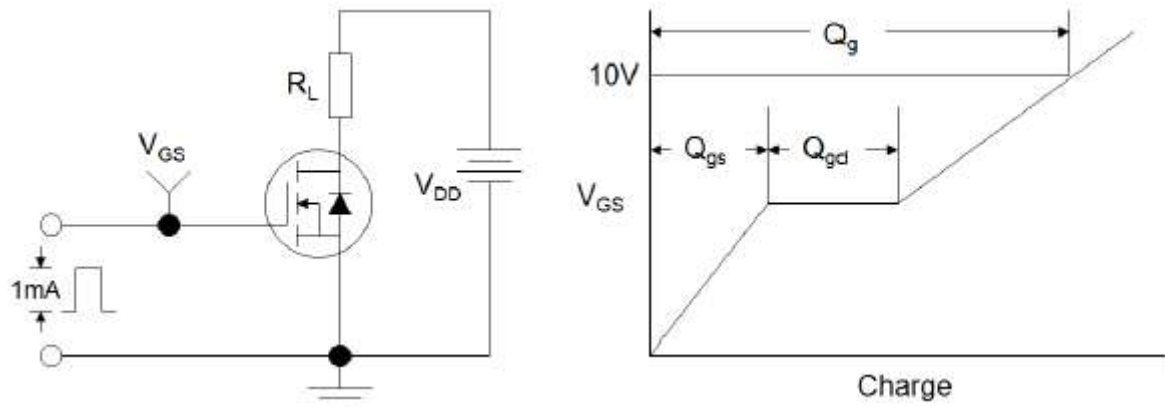


Figure1:Gate Charge Test Circuit & Waveform

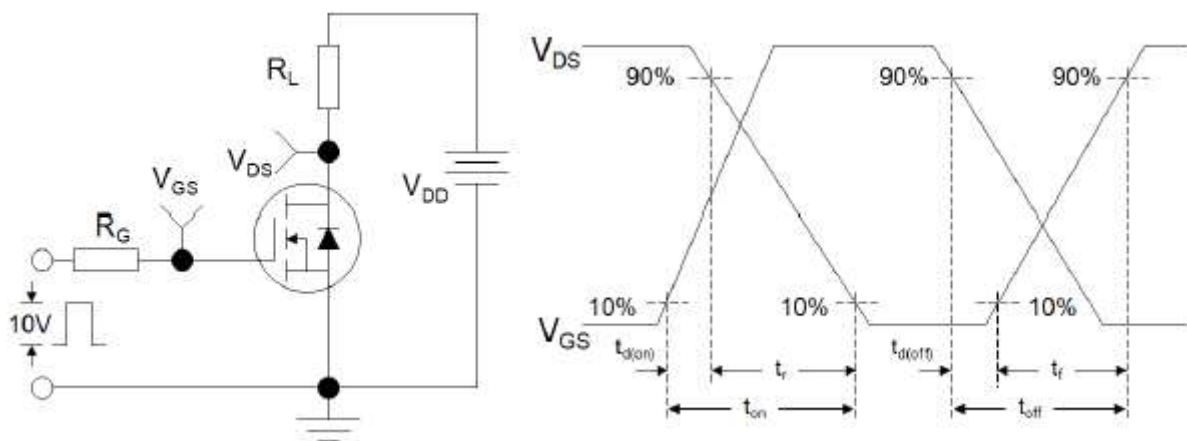


Figure 2: Resistive Switching Test Circuit & Waveforms

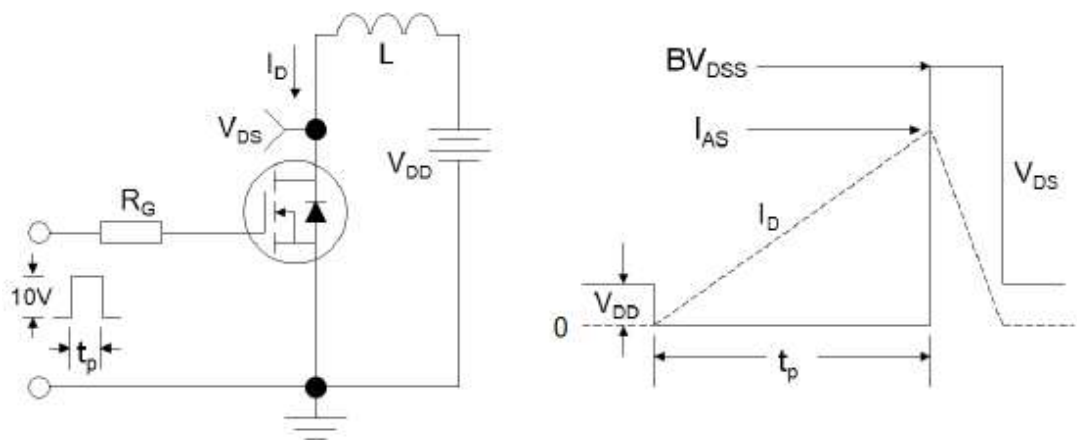


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

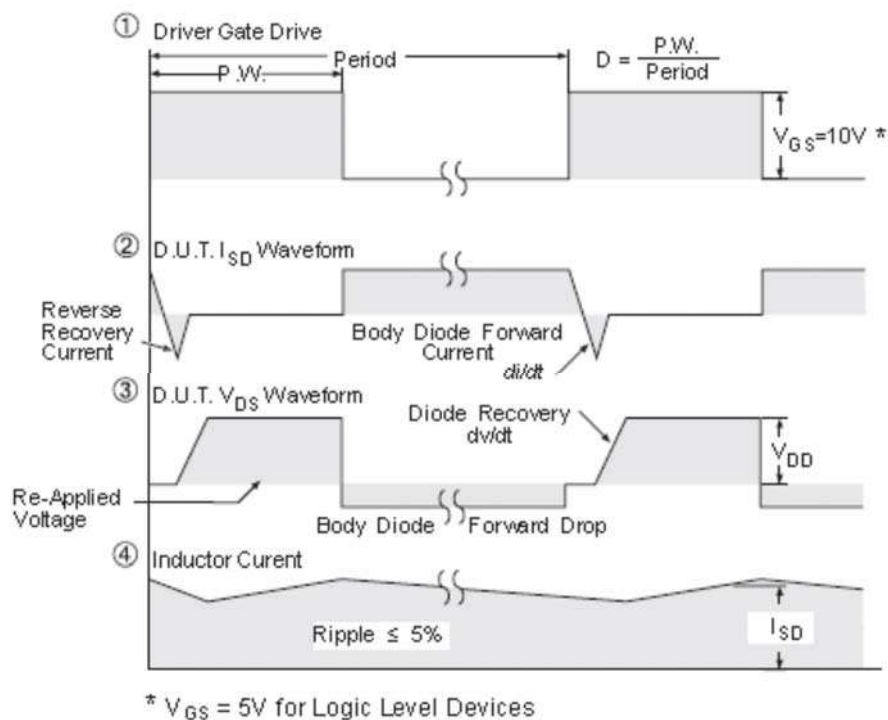
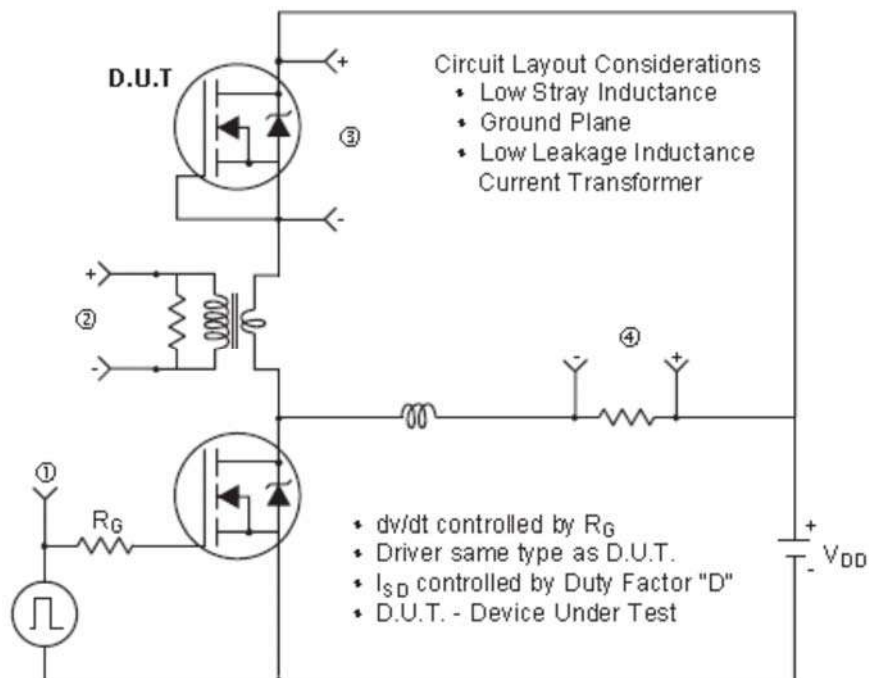
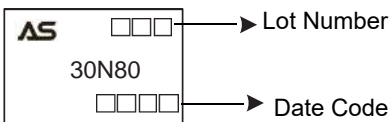


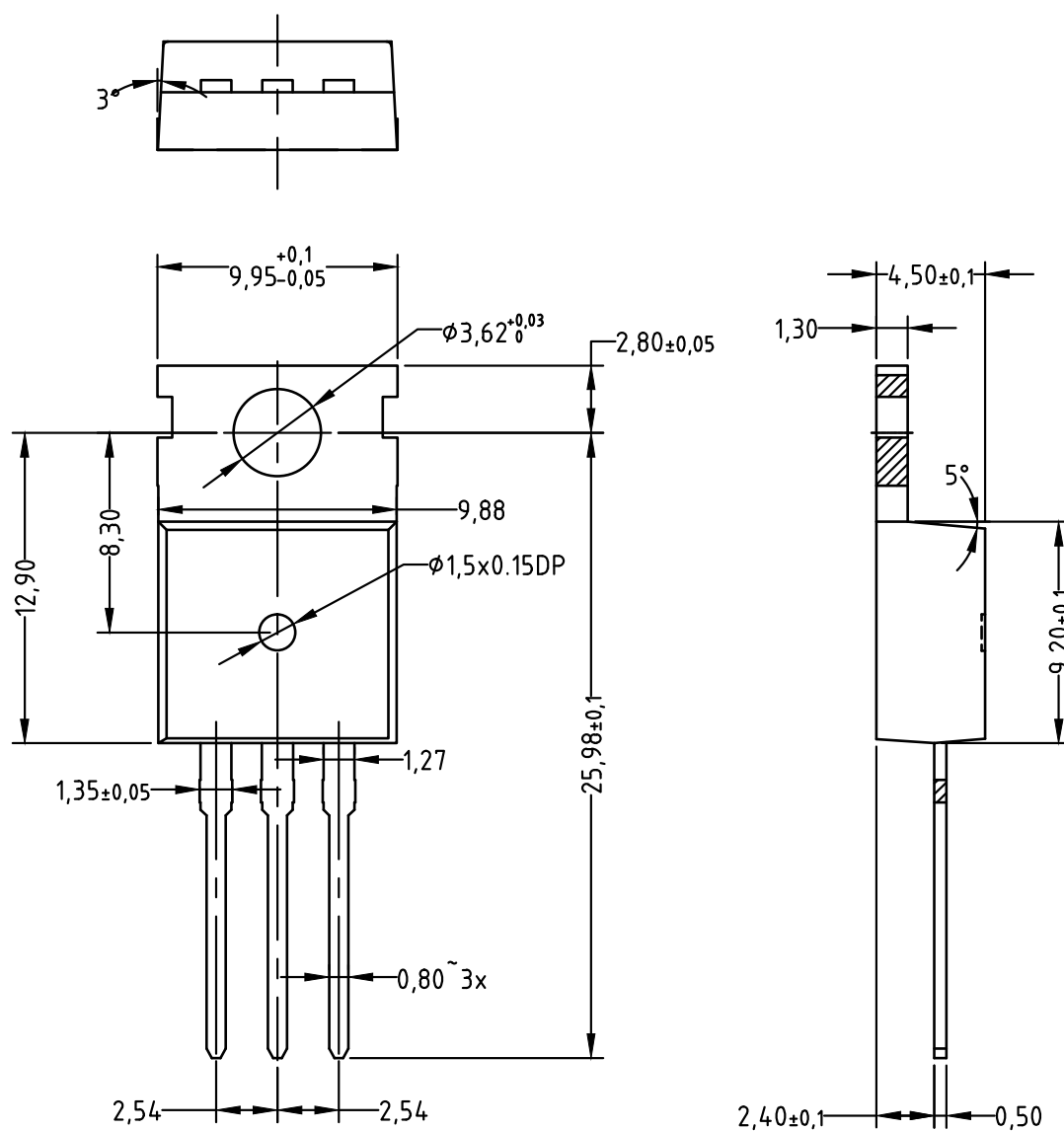
Figure 4: Peak Diode Recovery dv/dt Test Circuit & Waveforms (For N-channel)

Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM30N80P-T	30N80	TO-220	Tube	50/Tube

PACKAGE	MARKING
TO-220	 <p>The diagram shows a TO-220 package with the following markings: <ul style="list-style-type: none"> AS (ASDsemi logo) 30N80 (part number) Lot Number (indicated by two empty boxes) Date Code (indicated by four empty boxes) </p>

TO-220



IMPORTANT NOTICE

ShenZhen Ascend Semiconductor incorporated MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).

ShenZhen Ascend Semiconductor Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. ShenZhen Ascend Semiconductor Incorporated does not assume any liability arising out of the application or use of this document or any product described herein; neither does ShenZhen Ascend Semiconductor Incorporated convey any license under its patent or trademark rights, nor the rights of others. Any Customer or user of this document or products described herein in such applications shall assume .

all risks of such use and will agree to hold Ascendsemi Incorporated and all the companies whose products are represented on ShenZhen Ascend Semiconductor Incorporated website, harmless against all damages.

ShenZhen Ascend Semiconductor Incorporated does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel. Should Customers purchase or use ShenZhen Ascend Semiconductor Incorporated products for any unintended or unauthorized application, Customers shall indemnify and hold ShenZhen Ascend Semiconductor Incorporated and its representatives harmless against all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized application.

www.ascendsemi.com