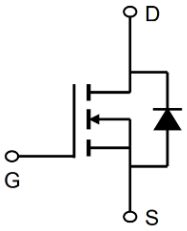
N-Channel Enhancement Mode MOSFET

GENERAL DESCRIPTION

The PW80N07 uses advanced trench technology to provide excellent RDS(ON), low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

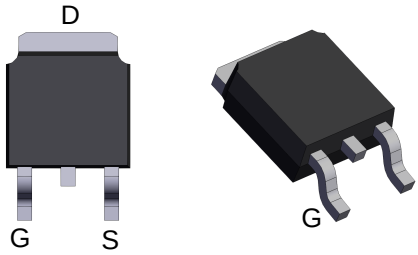
FEATURES

VDS = 68V ID =80A
RDS(ON) < 8.6mΩ @ VGS=10V (Type： 6.5mΩ)



Application

Battery protection
Load switch
Uninterruptible power supply



Absolute Maximum Ratings (TC=25℃unless otherwise noted)

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	68	V
VGS	Gate-Source Voltage	±20	V
ID@TC=25℃	Continuous Drain Current, VGS @ 10V	80	A
ID@TC=100℃	Continuous Drain Current, VGS @ 10V	52	A
IDM	Pulsed Drain Current	320	A
EAS	Single Pulse Avalanche Energy	121	mJ
IAS	Avalanche Current	22	A
PD@TC=25℃	Total Power Dissipation4	116	W
TSTG	Storage Temperature Range	-55 to 150	℃
TJ	Operating Junction Temperature Range	-55 to 150	℃
RθJA	Thermal Resistance Junction-ambient 1	63	℃/W
RθJC	Thermal Resistance Junction-Case1	0.85	℃/W

Electrical Characteristics (TJ=25 ℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BVDSS	Drain-Source Breakdown Voltage	VGS=0V, ID=250uA	68	72		V
△ BVDSS/ △TJ	BVDSS Temperature Coefficient	Reference to 25℃ , ID=1mA		0.023		V/℃
RDS(ON)	Static Drain-Source On-Resistance	VGS=10V, ID=10A		6.5	8.6	mΩ
VGS(th)	Gate Threshold Voltage	VGS=VD, ID=250uA	2.0	3.0	4.0	V
△VGS(th)	VGS(th) Temperature Coefficient			-4.2		mV/ ℃
IDSS	Drain-Source Leakage Current	VDS=24V, VGS=0V, TJ=25℃			1	uA
		VDS=24V, VGS=0V, TJ=55℃			5	
IGSS	Gate-Source Leakage Current	VGS=±20V, VDS=0V			±100	nA
gfs	Forward Transconductance	VDS=5V, ID=10A		5.5		S
Rg	Gate Resistance	VDS=0V, VGS=0V, f=1MHz		2.3		Ω
Qg	Total Gate Charge (4.5V)	VDS=30V, ID =20A, VGS =10V		35		nC
Qgs	Gate-Source Charge			11		
Qgd	Gate-Drain Charge			9		
Td(on)	Turn-On Delay Time	VDS=30V, ID =20A, RGEN=6Ω, VGS =10V		15		ns
Tr	Rise Time			94		
Td(off)	Turn-Off Delay Time			46		
Tf	Fall Time			32		
Ciss	Input Capacitance	VDS=15V, VGS=0V , f=1MHz		4062		pF
Coss	Output Capacitance			261		
Crss	Reverse Transfer Capacitance			231		
IS	Continuous Source Current	VG=VD=0V, Force Current			80	A
ISM	Pulsed Source Current				320	A
VSD	Diode Forward Voltage	VGS=0V, IS =80A			1.2	V
trr	Reverse Recovery Time	T J =25℃ IF=20A, dI/dt=100A/μs		78		nS
Qrr	Reverse Recovery Charge			51		nC

Note :

1、 The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.

2、 The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

3、 The EAS data shows Max. rating . The test condition is VDD=25V,VGS=10V,L=0.1mH,IAS=15A

4、 The power dissipation is limited by 175℃ junction temperature

5、 The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

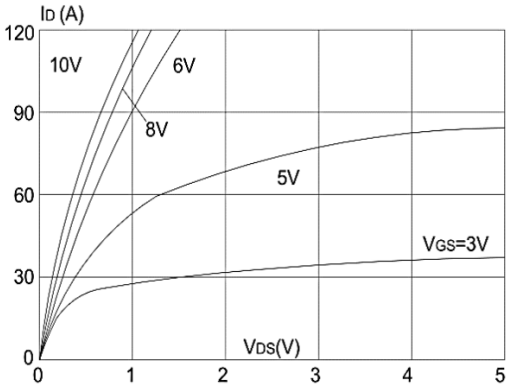


Figure1: Output Characteristics

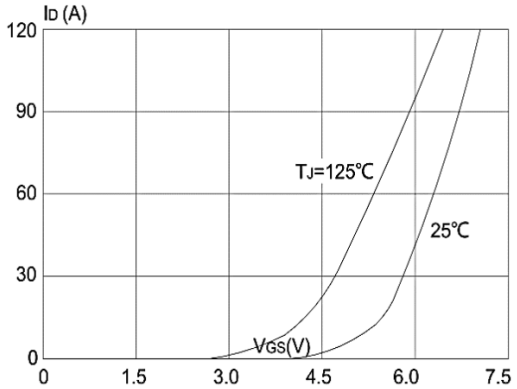


Figure 2: Typical Transfer Characteristics

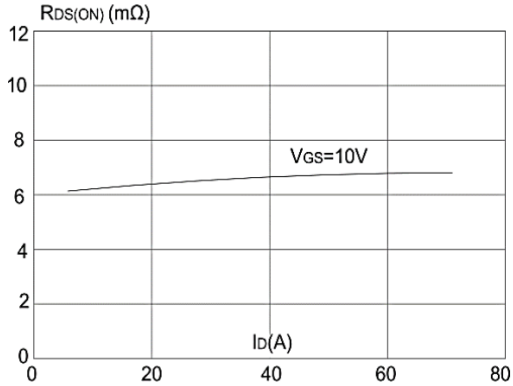


Figure 3:On-resistance vs. Drain Current

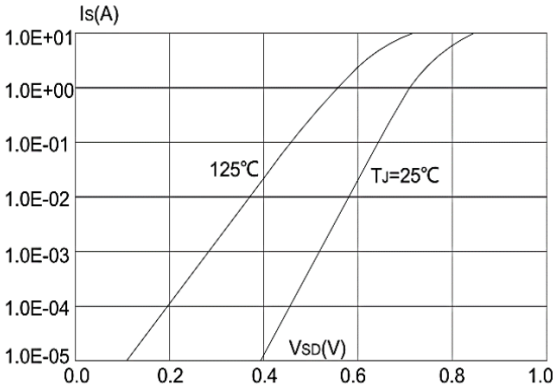


Figure 4: Body Diode Characteristics

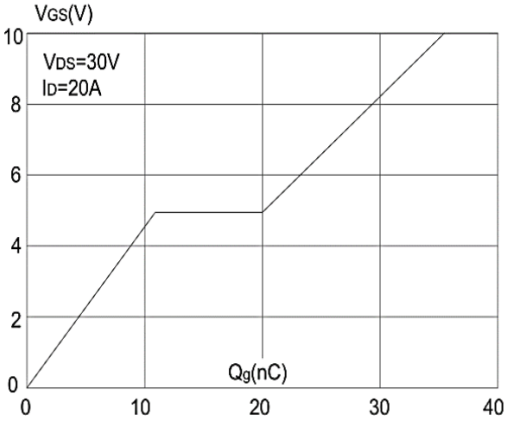


Figure 5: Gate Charge Characteristics

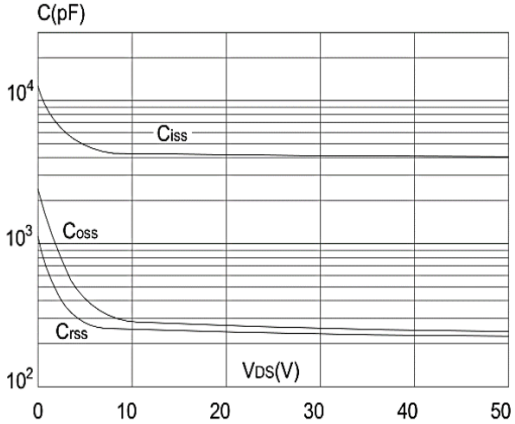


Figure 6: Capacitance Characteristics

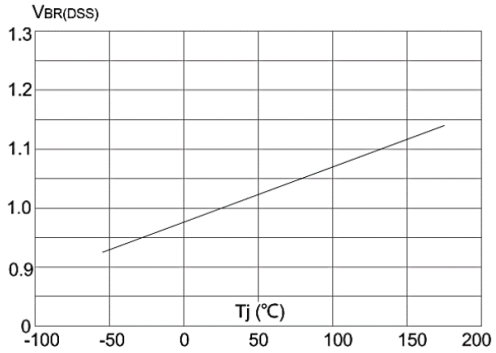


Figure 7: Normalized Breakdown Voltage vs Junction Temperature

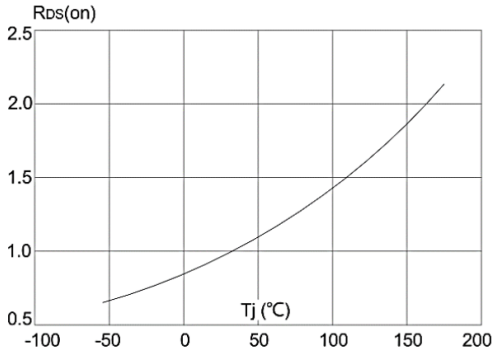


Figure 8: Normalized on Resistance vs. Junction Temperature

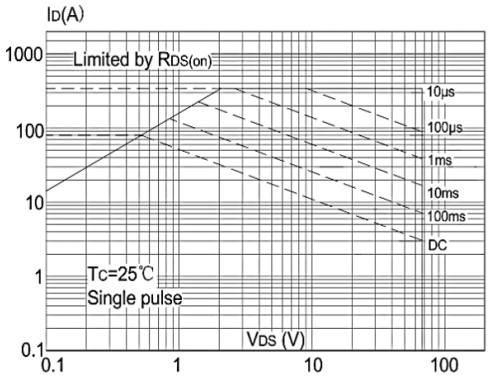


Figure 9: Maximum Safe Operating Area

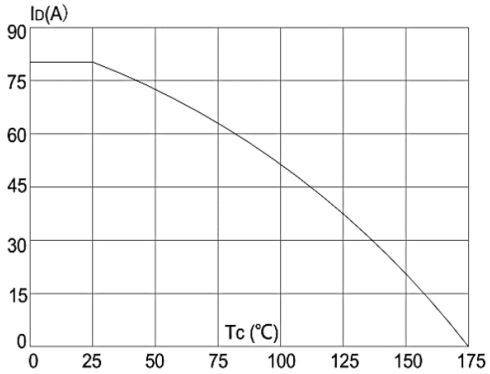


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

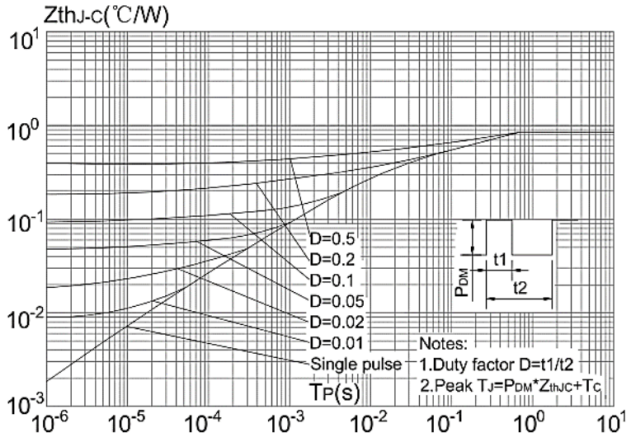
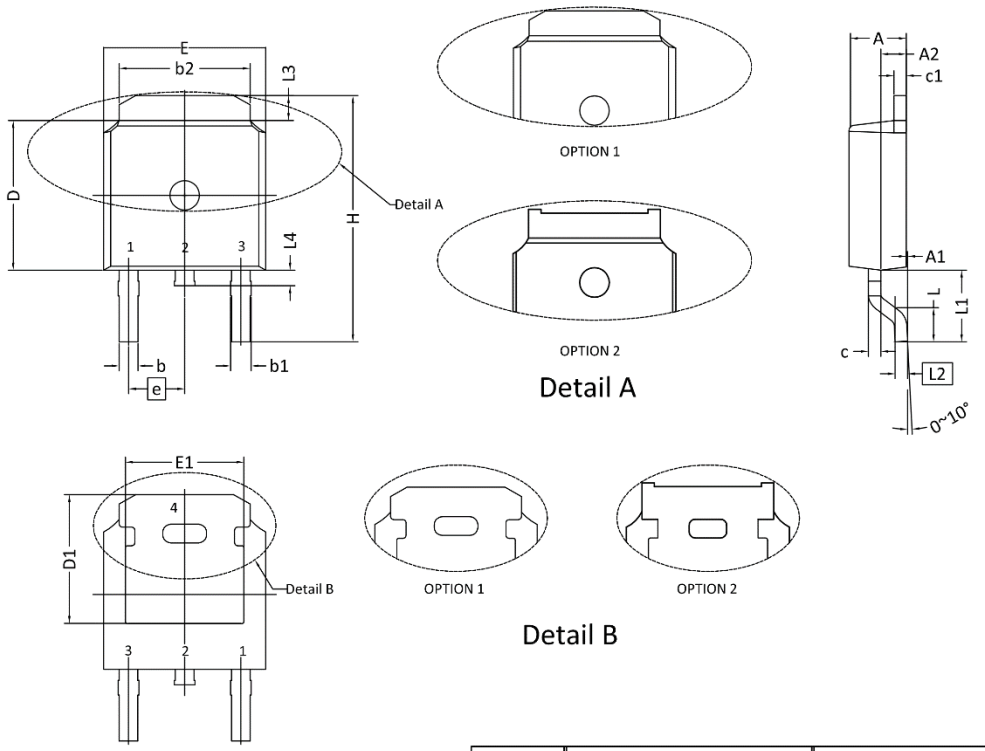


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambien

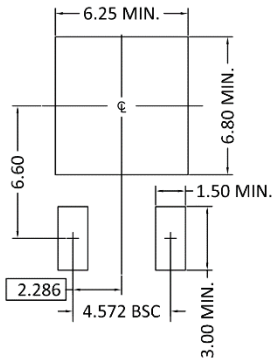
PACKAGE DESCRIPTION

TO252



SYMBOLS	DIMENSION IN MM			DIMENSION IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	2.184	2.286	2.400	0.086	0.090	0.094
A1	0.000	---	0.200	0.000	---	0.008
A2	0.889	1.041	1.170	0.035	0.041	0.046
b	0.635	0.762	0.889	0.025	0.030	0.035
b1	0.680	0.840	1.143	0.027	0.033	0.045
b2	4.953	5.340	5.500	0.195	0.210	0.217
c	0.450	0.508	0.610	0.018	0.020	0.024
c1	0.450	0.508	0.630	0.018	0.020	0.025
D	5.969	6.096	6.223	0.235	0.240	0.245
D1	5.210	5.249	5.380	0.205	0.207	0.212
E	6.350	6.604	6.800	0.250	0.260	0.268
E1	4.318	4.826	4.920	0.170	0.190	0.194
e	2.286 BSC			0.090 BSC		
e1	4.572 BSC			0.180 BSC		
H	9.398	10.033	10.500	0.370	0.395	0.413
L	1.270	1.520	2.032	0.050	0.060	0.080
L1	2.921 REF.			0.115 REF.		
L2	0.408	0.508	0.608	0.016	0.020	0.024
L3	0.889	1.016	1.270	0.035	0.040	0.050
L4	0.600	---	1.016	0.024	---	0.040

RECOMMENDED LAND PATTERN



UNIT: mm

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