

Features

- Super Low Gate Charge
- 100% EAS Guaranteed
- Green Device Available
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

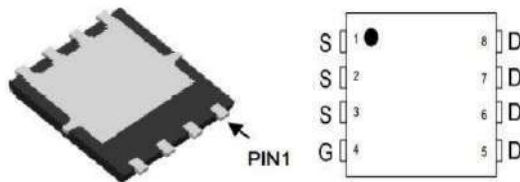
Application

- Provides excellent R_{DS(on)} for most synchronizations
- Application of gate charge Buck converter

Product Summary



V_{DS}	-40	V
$R_{DS(on),Typ} @ V_{GS}=-10 V$	4.4	m Ω
I_D	-90	A



PDFN5x6-8

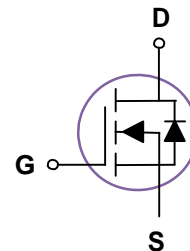


Table 1. Absolute Maximum Ratings (TA=25°C)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage ($V_{GS}=0V$)	-40	V
V_{GS}	Gate-Source Voltage ($V_{DS}=0V$)	± 20	V
$I_{D(DC)}$	Drain Current-Continuous	-90	A
$I_{DM(pluse)}$	Drain Current-Continuous@ Current-Pulsed	-339	A
P_D	Maximum Power Dissipation	58	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 To 175	°C

Table 2. Thermal Characteristic

Symbol	Parameter	Max	Unit
$R_{\theta JC}$	Thermal Resistance,Junction-to-Case	2.4	°C/W
$R_{\theta JA}$	Thermal Resistance,Junction-ambient	62	°C/W

Table 3. Electrical Characteristics (TA=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V I _D =250μA	-40			V
I _{DSS}	Zero Gate Voltage Drain Current(Tc=25°C)	V _{DS} =-40V, V _{GS} =0V			-1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	-1.0	-1.5	-2.5	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =-4.5V, I _D =-15A		5.8	7	mΩ
		V _{GS} =-10V, I _D =-20A		4.4	5.3	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-20V, V _{GS} =0V f=1.0MHz		5508		PF
C _{oss}	Output Capacitance			452		PF
C _{rss}	Reverse Transfer Capacitance			286		PF
Switching Times						
t _{d(on)}	Turn-on Delay Time	V _{DS} =-20V I _D =-1A V _{GS} =-10V R _L =1.6Ω		16		nS
t _r	Turn-on Rise Time			17		nS
t _{d(off)}	Turn-Off Delay Time			68		nS
t _f	Turn-Off Fall Time			31		nS
Q _g	Total Gate Charge	V _{DS} =-20V		118		nC
Q _{gs}	Gate-Source Charge	V _{GS} =-10V		13		nC
Q _{gd}	Gate-Drain Charge	I _D =-8.0A		22		nC

Source-Drain Diode Characteristics						
I _{SD}	Source-Drain Current(Body Diode)			-90		A
V _{SD}	Forward On Voltage	I _{SD} =-8A, V _{GS} =0V,		-1.2		V
t _{on}	Forward Turn-on Time	Intrinsic turn-on time is negligible(turn-on is dominated				

Notes:

- 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 power dissipation is limited by 175°C junction temperature
- 4.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics

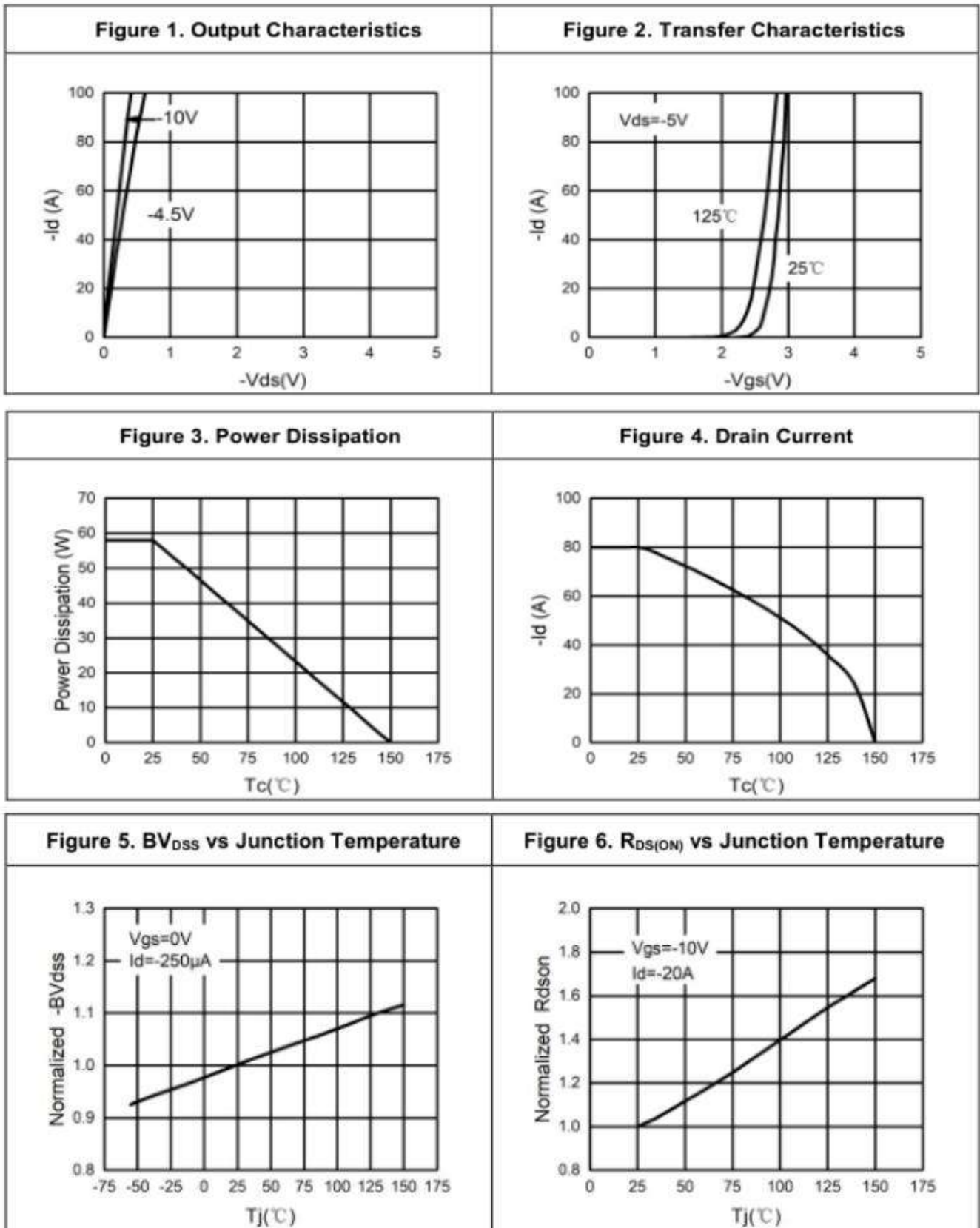


Figure 7. Gate Charge Waveforms

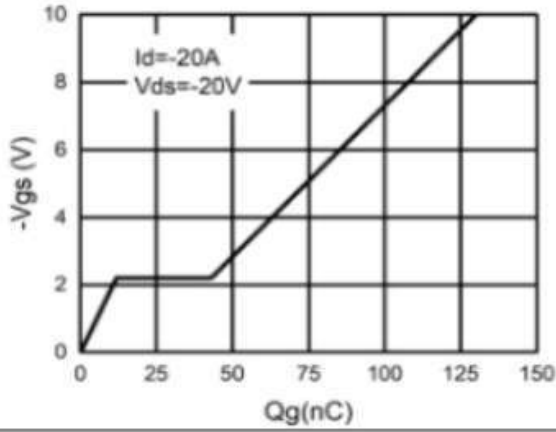


Figure 8. Capacitance

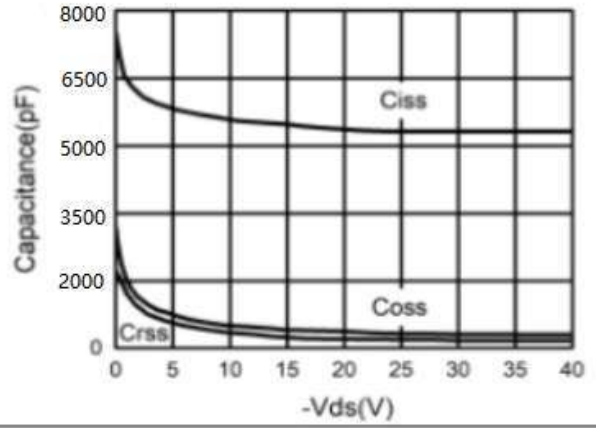


Figure 9. Body-Diode Characteristics

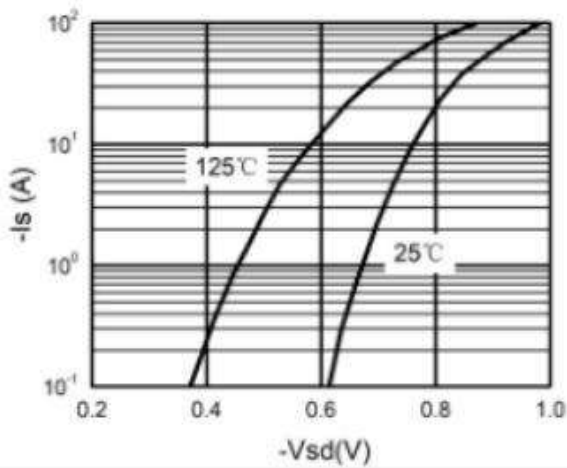
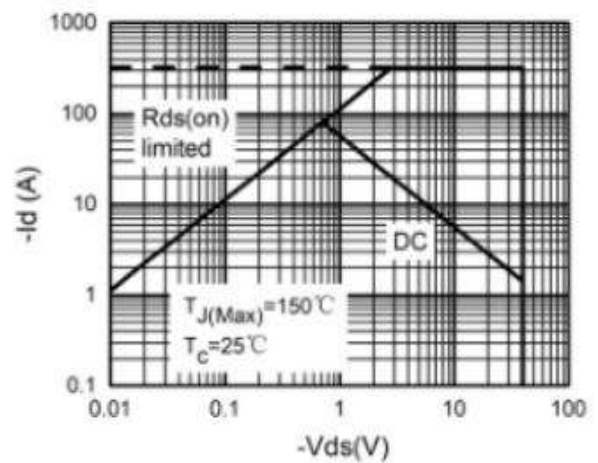
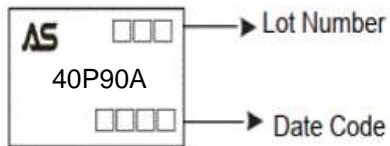


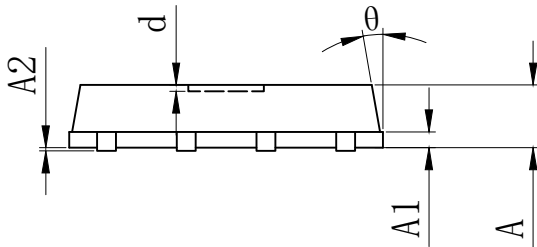
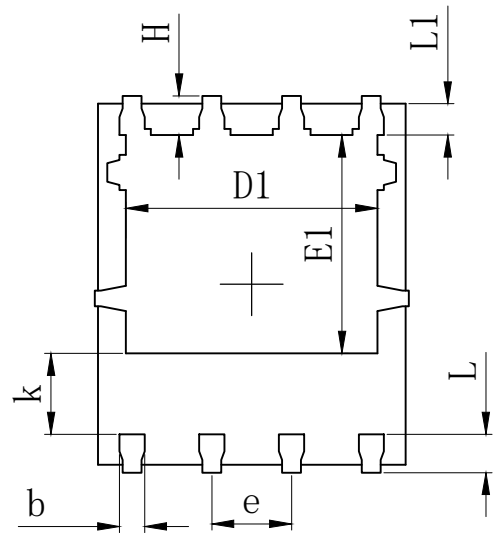
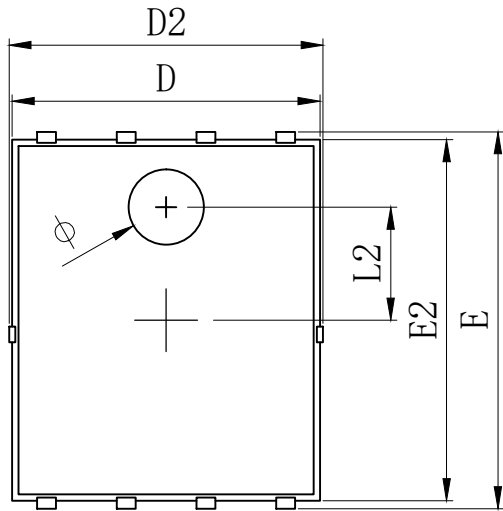
Figure 10. Maximum Safe Operating Area



Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM40P90AQ-R	40P90A	PDFN5*6-8	Tape&Reel	4000/Reel

PACKAGE	MARKING
PDFN5*6-8	



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	0.900	1.000	1.100
A1	0.254 REF.		
A2	0~0.05		
D	4.824	4.900	4.976
D1	3.910	4.010	4.110
D2	4.924	5.000	5.076
E	5.924	6.000	6.076
E1	3.375	3.475	3.575
E2	5.674	5.750	5.826
b	0.350	0.400	0.450
e	1.270 TYP.		
L	0.534	0.610	0.686
L1	0.424	0.500	0.576
L2	1.800 REF.		
k	1.190	1.290	1.390
H	0.549	0.625	0.701
θ	8°	10°	12°
ϕ	1.100	1.200	1.300
d			0.100

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