Features

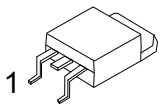
- Super Low Gate Charge
- 100% EAS Guaranteed
- Green Device Available
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

Product Summary

V_{DS}	-40	V
$R_{DS(on),Typ}$@ V_{GS}=-10 V	5.2	mΩ
I_D	-90	A

Application

- Provides excellent RDSON for most synchronizations
- Application of gate charge Buck converter



TO-252

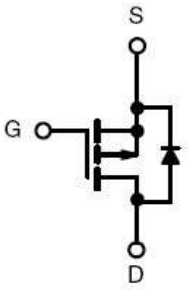


Table 1. Absolute Maximum Ratings (TA=25℃)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage (VGS=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	℃

Table 2. Thermal Characteristic

Symbol	Parameter	Max	Unit
$R_{\theta JC}$	Thermal Resistance,Junction-to-Case	2.3	℃/W
$R_{\theta JA}$	Thermal Resistance,Junction-ambient	62	℃/W

Table 3. Electrical Characteristics (TA=25℃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℃)	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		6.6	8	mΩ
		V_{GS}=-10V, I_D=-20A		5.2	6.5	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=-20V,V_{GS}=0V f=1.0MHz		5530		PF
C_{oss}	Output Capacitance			454		PF
C_{rss}	Reverse Transfer Capacitance			287		PF
Switching Times						
$t_{d(on)}$	Turn-on Delay Time	VDS=-20V ID=-1A VGS =-10V RL =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	VDS=-20V VGS=-10V ID=-8.0A		118		nC
Q_{gs}	Gate-Source Charge			13		nC
Q_{gd}	Gate-Drain Charge			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℃ junction temperature

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

Typical Characteristics

Figure 1. Output Characteristics

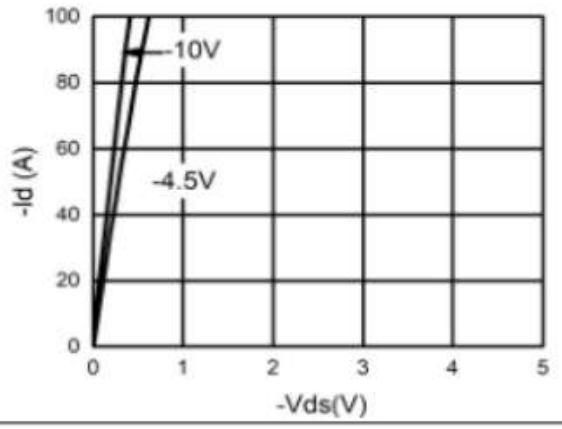


Figure 2. Transfer Characteristics

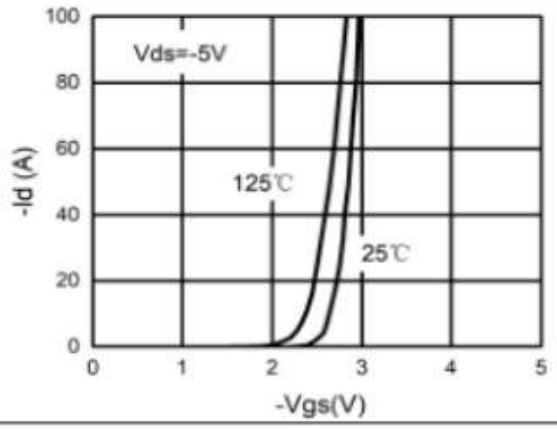


Figure 3. Power Dissipation

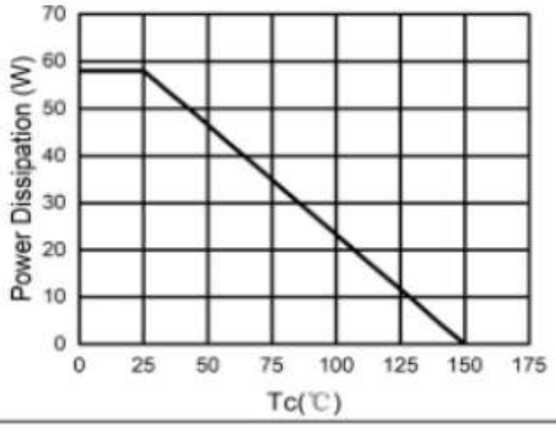


Figure 4. Drain Current

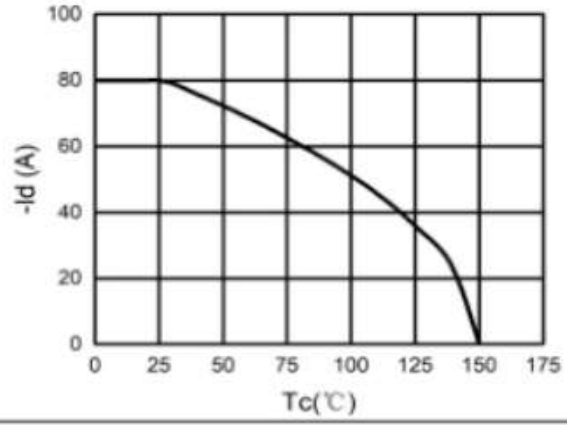


Figure 5. BV_{DSS} vs Junction Temperature

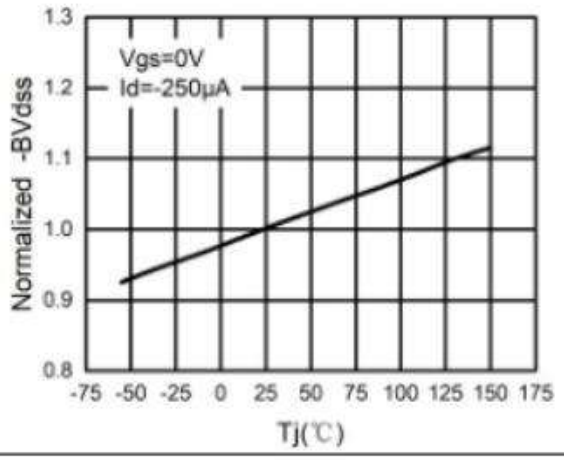


Figure 6. $R_{DS(ON)}$ vs Junction Temperature

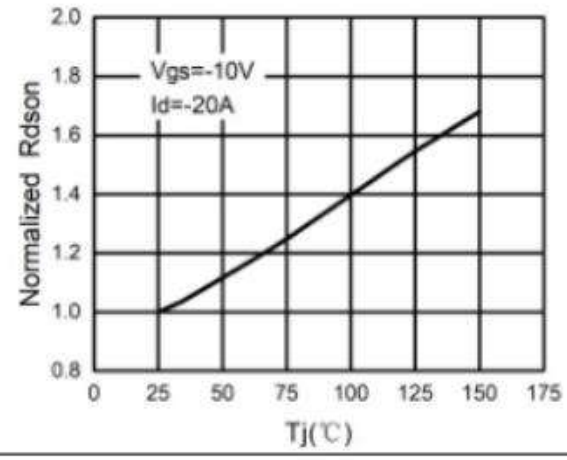


Figure 7. Gate Charge Waveforms

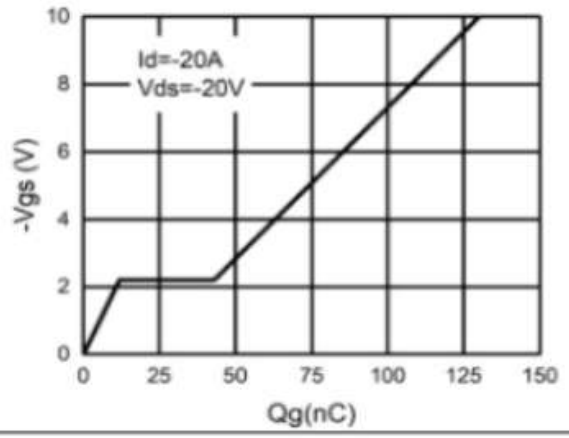


Figure 8. Capacitance

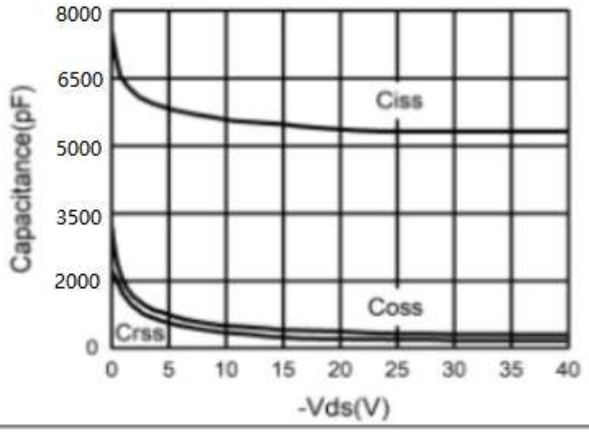


Figure 9. Body-Diode Characteristics

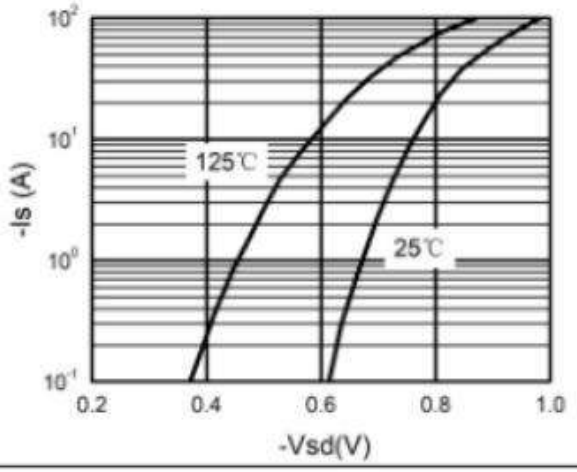
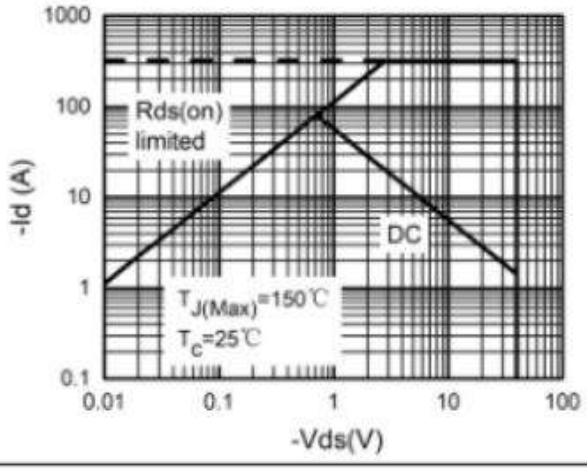
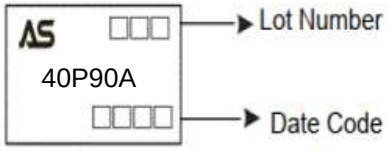


Figure 10. Maximum Safe Operating Area



Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM40P90AKQ-R	40P90A	TO-252	Tape&Reel	2500/Reel

PACKAGE	MARKING
TO-252	

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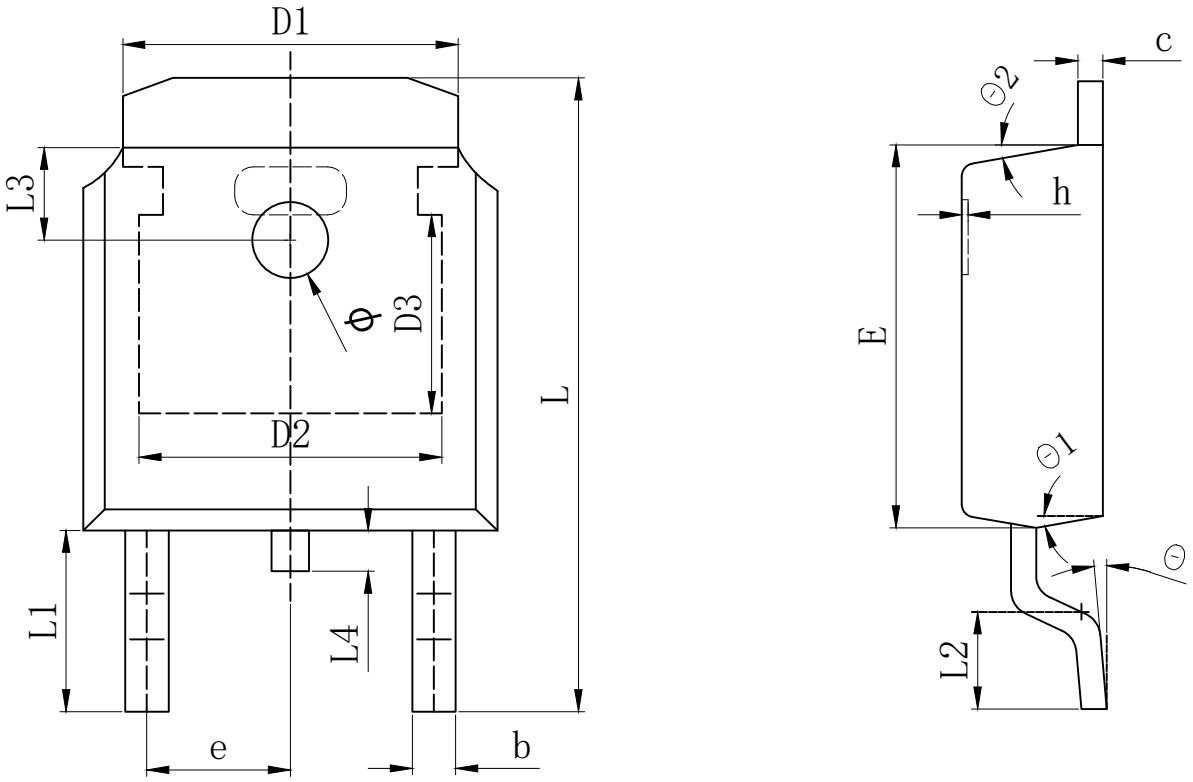

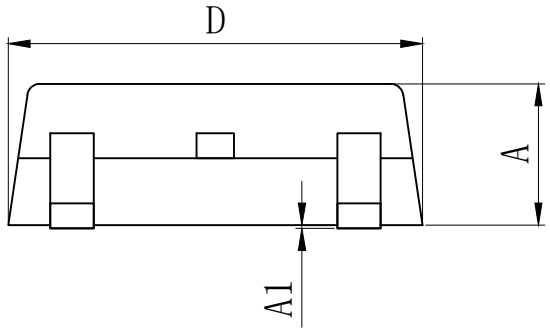

SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	2.200	2.300	2.400
A1	0.000		0.127
b	0.640	0.690	0.740
c(电镀后)	0.460	0.520	0.580
D	6.500	6.600	6.700
D1	5.334 REF		
D2	4.826 REF		
D3	3.166 REF		
E	6.000	6.100	6.200
e	2.286 TYP		
h	0.000	0.100	0.200
L	9.900	10.100	10.300
L1	2.888 REF		
L2	1.400	1.550	1.700
L3	1.600 REF		
L4	0.600	0.800	1.000
ϕ	1.100	1.200	1.300
θ	0°		8°
θ1	9° TYP		
θ2	9° TYP		

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