AD100N60D5

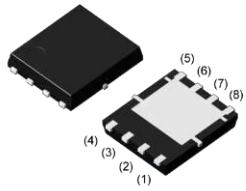
Nch 100V 60A Power MOSFET

datasheet

V_{DSS}	100V
$R_{DS(on)}$(typ.)	8.5mΩ
I_D	60A
P_D	98W

Outline

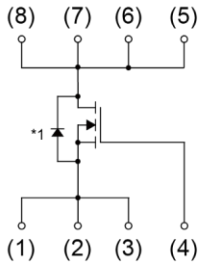
P PAK5X6



Features

- *100V,60A, RDS(ON) =8.5mΩ@VGS = 10V*
- *Improved dv/dt capability*
- *Fast switching*
- *100% EAS Guaranteed*
- *Green Device Available*

(1) Source
(2) Source
(3) Source
(4) Gate
(5) Drain
(6) Drain
(7) Drain
(8) Drain
*1 Body Diode



Applications

- *Networking*
- *Load Switch*
- *LED applications*
- *Quick Charger*

Type		
	Reel size (mm)	330
	Tape width (mm)	12
	Basic ordering unit (pcs)	5000
	Taping code	D5
	Marking	AD100N60D5

Absolute Maximum Ratings Tc=25℃ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current – Continuous (T_C=25℃)	60	A
	Drain Current – Continuous (T_C=100℃)	38	A
I_{DM}	Drain Current – Pulsed[1]	240	A
EAS	Single Pulse Avalanche Energy[2]	115	mJ
IAS	Single Pulse Avalanche Current[2]	48	A
P_D	Power Dissipation (T_C=25℃)	98	W
	Power Dissipation – Derate above 25℃	0.79	W/℃
T_{STG}	Storage Temperature Range	-50 to 150	℃
T_J	Operating Junction Temperature Range	-50 to 150	℃

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	62	℃/W
$R_{\theta JC}$	Thermal Resistance Junction to Case	---	1.27	℃/W

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

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	100	---	---	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=800V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=80V , V_{GS}=0V , T_J=85℃	---	---	10	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=20V , V_{DS}=0V	---	---	100	nA

On Characteristics

$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=25A	---	8.5	10.3	mΩ
		V_{GS}=4.5V , I_D=20A	---	11.5	15	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1.2	1.5	2.5	V
gfs	Forward Transconductance	V_{DS}=10V , I_D=2A	---	10	---	S

Dynamic Characteristics

Q_g	Total Gate Charge[3,4]	V_{DS}=50V , V_{GS}=10V , I_D=10A	---	26.1	39	nC
Q_{gs}	Gate-Source Charge[3,4]		---	6.5	10	
Q_{gd}	Gate-Drain Charge[3,4]		---	5.3	8	
$T_{d(on)}$	Turn-On Delay Time[3,4]	V_{DD}=50V , V_{GS}=10V , R_G=6Ω	---	14.2	28	ns
T_r	Rise Time[3,4]	I_D=1A	---	20.8	42	
$T_{d(off)}$	Turn-Off Delay Time[3,4]		---	42	84	
T_f	Fall Time[3,4]		---	30	60	
C_{iss}	Input Capacitance	V_{DS}=50V , V_{GS}=0V , F=1MHz	---	1495	2242	pF
C_{oss}	Output Capacitance		---	215	322	
C_{rss}	Reverse Transfer Capacitance		---	8	20	
R_g	Gate resistance	V_{GS}=0V, V_{DS}=0V, F=1MHz	---	1.04	---	Ω

Drain-Source Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	60	A
I_{SM}	Pulsed Source Current		---	---	120	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1	V
t_{rr}	Reverse Recovery Time[3]	I_S=5A , dI/dt=100A/μs T_J=25℃	---	38	---	ns
Q_{rr}	Reverse Recovery Charge[3]		---	80	---	nC

Note :

1.Repetitive Rating : Pulsed w idth limited by maximum junction temperature.

2.V_{DD}=25V,V_{GS}=10V,L=0.1mH,I_{AS}=39A., Starting T_J=25℃

3.The data tested by pulsed , pulse w idth ≦ 300us , duty cycle ≦ 2%.

4.Essentially independent of operating temperature.

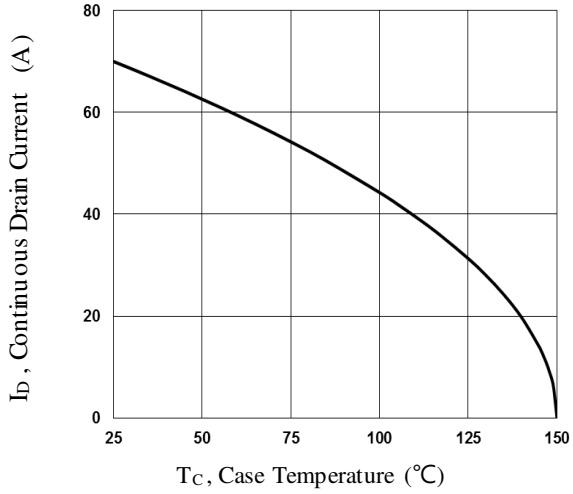


Fig.1 Continuous Drain Current vs. T_C

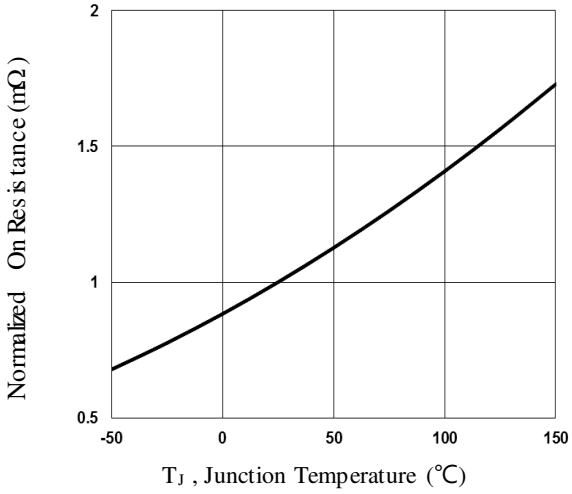


Fig.2 Normalized RDSON vs. T_J

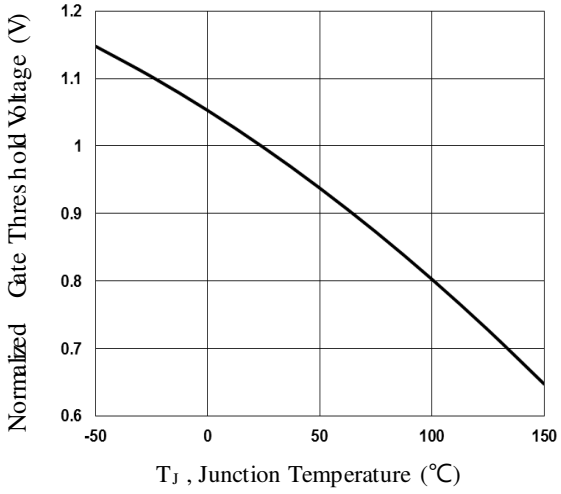


Fig.3 Normalized V_{th} vs. T_J

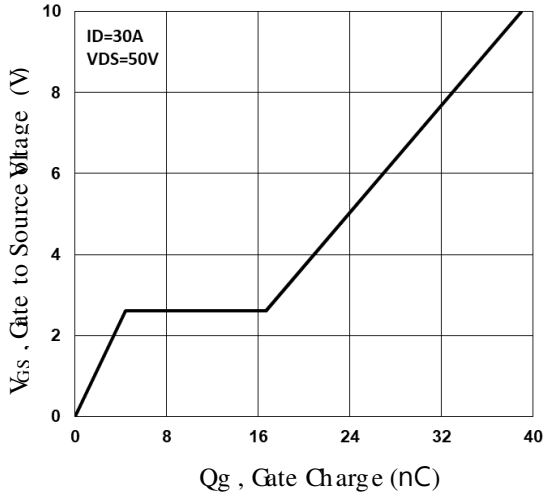


Fig.4 Gate Charge Waveform

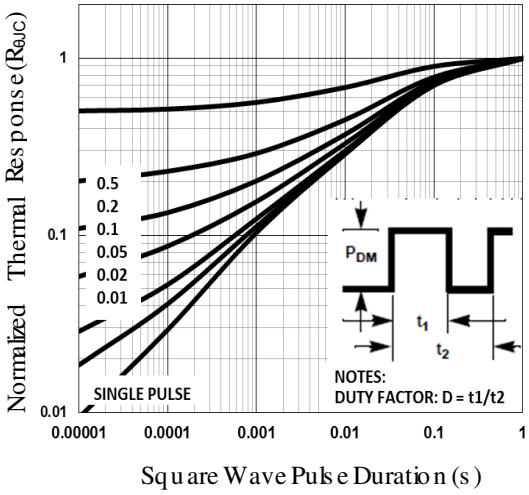


Fig.5 Normalized Transient Impedance

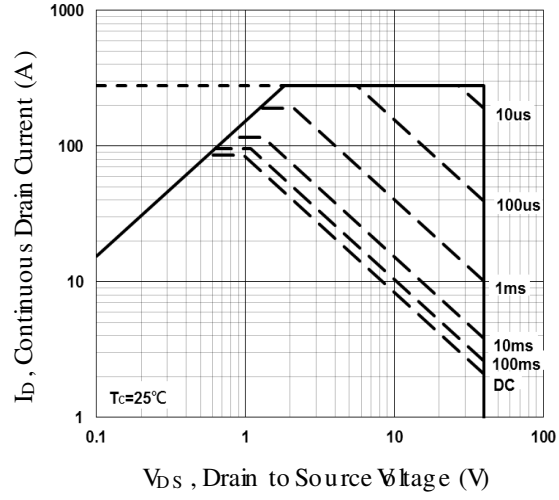


Fig.6 Maximum Safe Operation Area

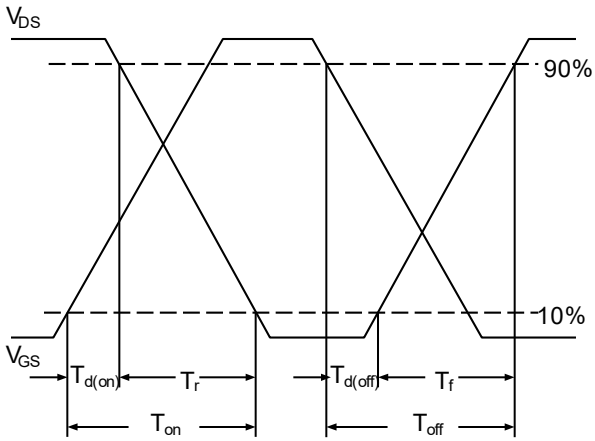


Fig.7 Switching Time Waveform

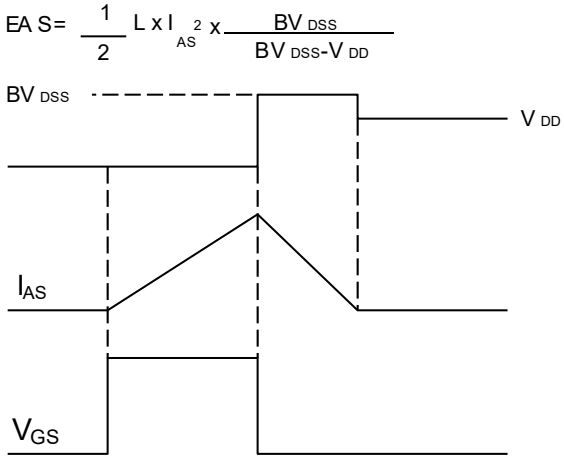


Fig.8 EAS Waveform

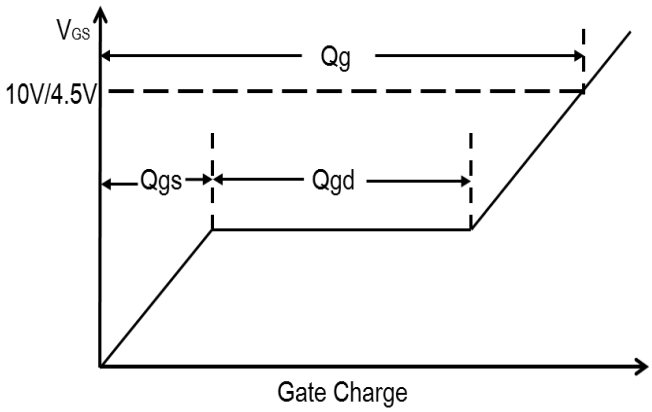
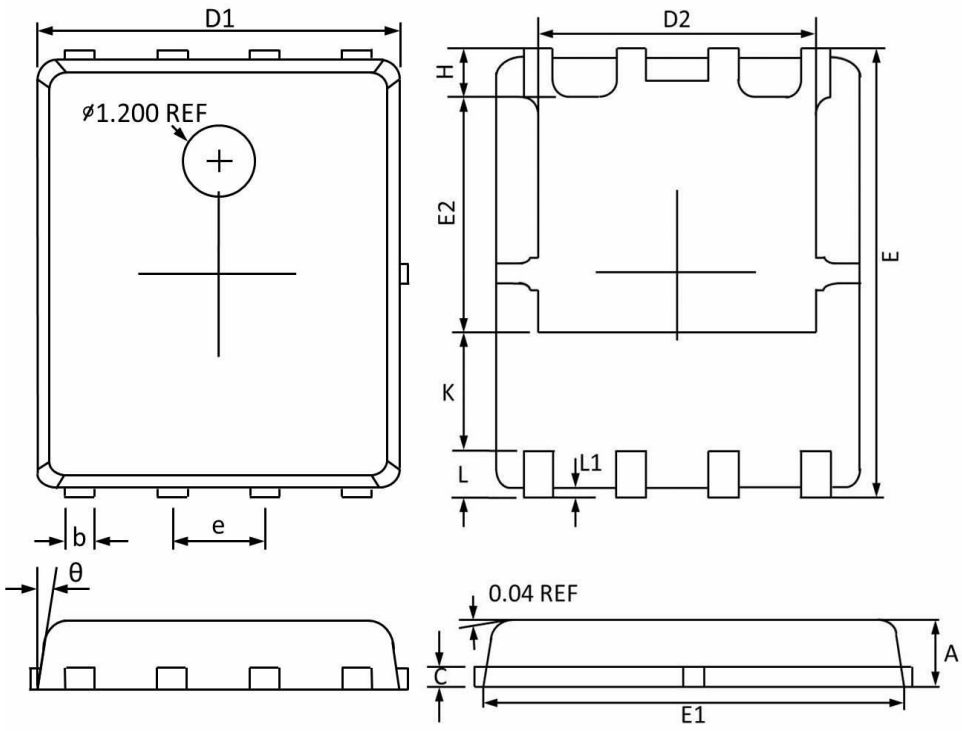


Fig.9 Gate Charge Waveform

PPAK5x6 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	1.100	0.800	0.043	0.031
b	0.510	0.330	0.020	0.013
C	0.300	0.200	0.012	0.008
D1	5.100	4.800	0.201	0.189
D2	4.100	3.610	0.161	0.142
E	6.200	5.900	0.244	0.232
E1	5.900	5.700	0.232	0.224
E2	3.780	3.350	0.149	0.132
e	1.27BSC		0.05BSC	
H	0.700	0.410	0.028	0.016
K	1.500	1.100	0.059	0.043
L	0.710	0.510	0.028	0.020
L1	0.200	0.060	0.008	0.002
θ	12°	0°	12°	0°