

$V_{DSS}$	100V
$R_{DS(on)}(Max.)$	10.3m $\Omega$
$I_D$	60A
$P_D$	98W

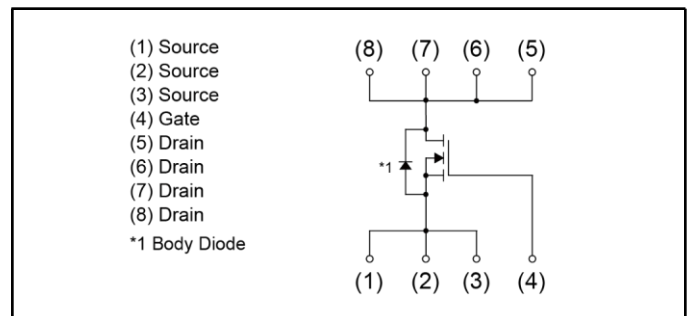
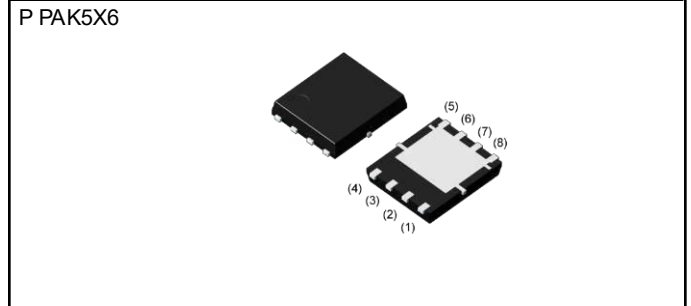
### Features

- 100V, 60A,  $R_{DS(ON)} = 10.3m\Omega @ V_{GS} = 10V$
- Improved  $dv/dt$  capability
- Fast switching
- 100% EAS Guaranteed
- Green Device Available

### Applications

- Networking
- Load Switch
- LED applications
- Quick Charger

### Outline



Type	Reel size (mm)	330
	Tape width (mm)	12
	Basic ordering unit (pcs)	3000
	Taping code	D5
	Marking	AD100N60D5

### Absolute Maximum Ratings $T_c=25^\circ\text{C}$ 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 <sup>1</sup>	240	A
EAS	Single Pulse Avalanche Energy <sup>2</sup>	115	mJ
IAS	Single Pulse Avalanche Current <sup>2</sup>	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	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction to Case	---	1.27	$^\circ\text{C/W}$

### Electrical Characteristics (T<sub>J</sub>=25 °C, unless otherwise noted)

#### Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	100	---	---	V
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =800V, V <sub>GS</sub> =0V, T <sub>J</sub> =25.	---	---	1	uA
		V <sub>DS</sub> =80V, V <sub>GS</sub> =0V, T <sub>J</sub> =85.	---	---	10	uA
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> 20V, V <sub>DS</sub> =0V	---	---	100	nA

#### On Characteristics

R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =25A	---	8.5	10.3	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =20A	---	11.5	15	mΩ
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA	1.2	1.5	2.5	V
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =10V, I <sub>D</sub> =2A	---	10	---	S

#### Dynamic Characteristics

Q <sub>g</sub>	Total Gate Charge <sup>3,4</sup>	V <sub>DS</sub> =50V, V <sub>GS</sub> =10V, I <sub>D</sub> =10A	---	26.1	39	nC
Q <sub>gs</sub>	Gate-Source Charge <sup>3,4</sup>		---	6.5	10	
Q <sub>gd</sub>	Gate-Drain Charge <sup>3,4</sup>		---	5.3	8	
T <sub>d(on)</sub>	Turn-On Delay Time <sup>3,4</sup>	V <sub>DD</sub> =50V, V <sub>GS</sub> =10V, R <sub>G</sub> =6Ω I <sub>D</sub> =1A	---	14.2	28	ns
T <sub>r</sub>	Rise Time <sup>3,4</sup>		---	20.8	42	
T <sub>d(off)</sub>	Turn-Off Delay Time <sup>3,4</sup>		---	42	84	
T <sub>f</sub>	Fall Time <sup>3,4</sup>		---	30	60	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =50V, V <sub>GS</sub> =0V, F=1MHz	---	1495	2242	pF
C <sub>oss</sub>	Output Capacitance		---	215	322	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	8	20	
R <sub>g</sub>	Gate resistance	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, F=1MHz	---	1.04	---	Ω

#### Drain-Source Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I <sub>S</sub>	Continuous Source Current	V <sub>G</sub> =V <sub>D</sub> =0V, Force Current	---	---	60	A
I <sub>SM</sub>	Pulsed Source Current		---	---	120	A
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =1A, T <sub>J</sub> =25.	---	---	1	V
t <sub>rr</sub>	Reverse Recovery Time <sup>3</sup>	I <sub>S</sub> =5A, dI/dt=100A/μs, T <sub>J</sub> =25.	---	38	---	ns
Q <sub>rr</sub>	Reverse Recovery Charge <sup>3</sup>		---	80	---	nC

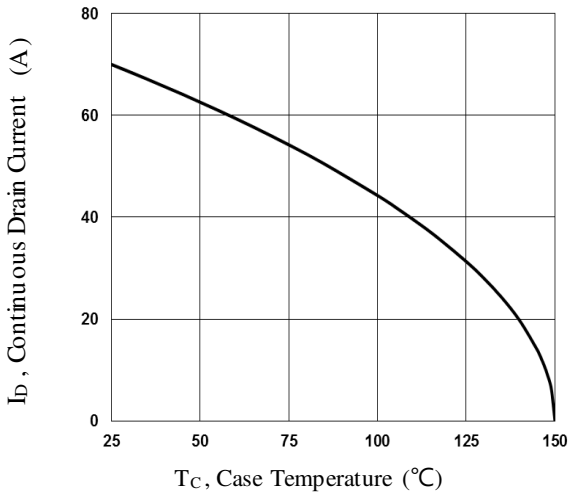
Note :

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

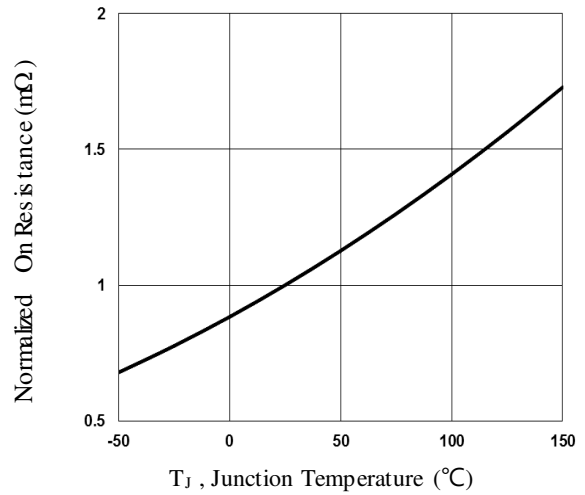
2. V<sub>DD</sub>=25V, V<sub>GS</sub>=10V, L=0.1mH, I<sub>AS</sub>=39A., Starting T<sub>J</sub>=25°C

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

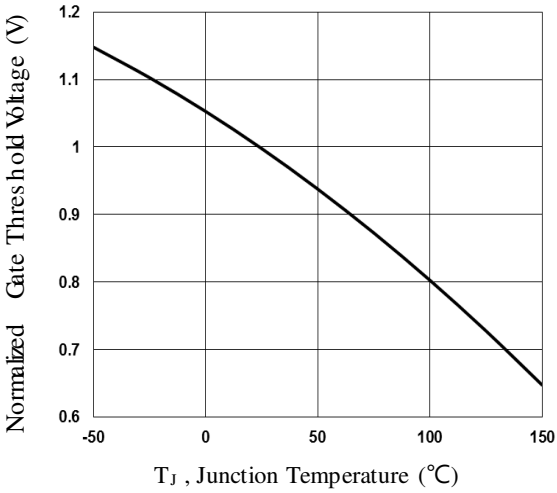
4.Essentially independent of operating temperature.



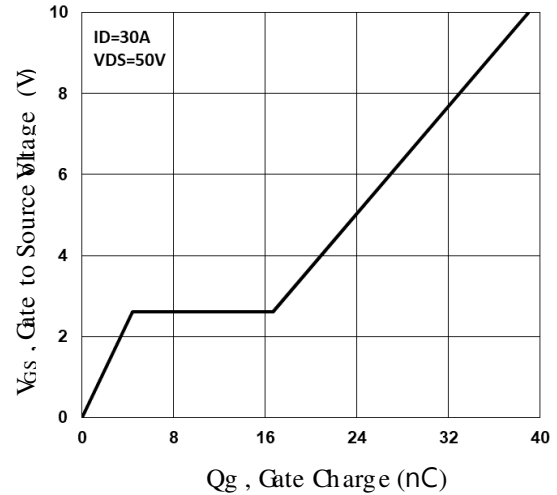
**Fig.1 Continuous Drain Current vs.  $T_c$**



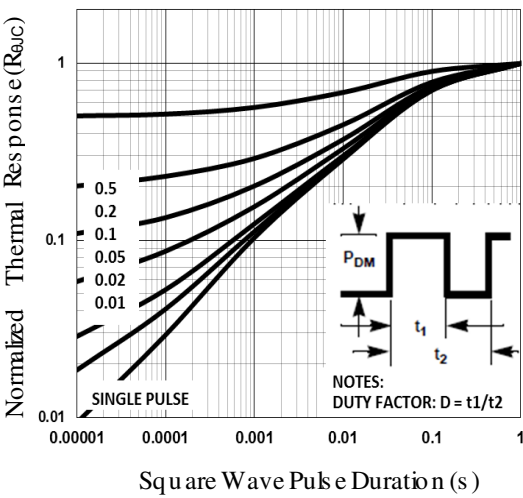
**Fig.2 Normalized  $R_{DS(on)}$  vs.  $T_j$**



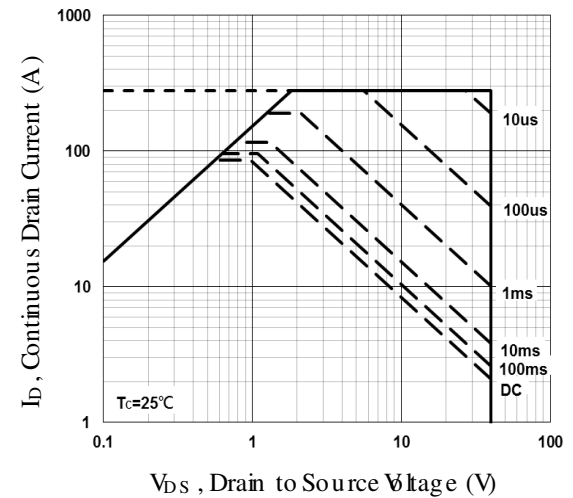
**Fig.3 Normalized  $V_{th}$  vs.  $T_j$**



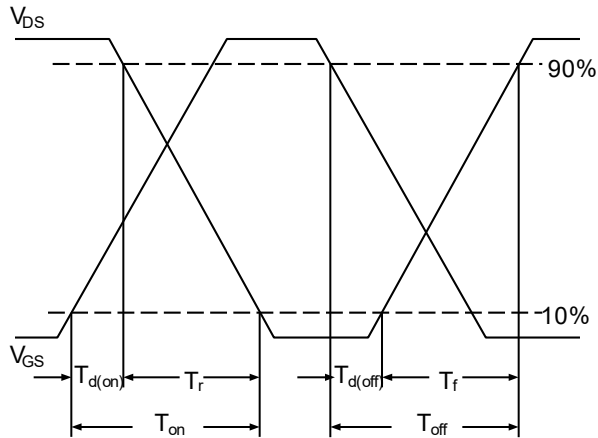
**Fig.4 Gate Charge Waveform**



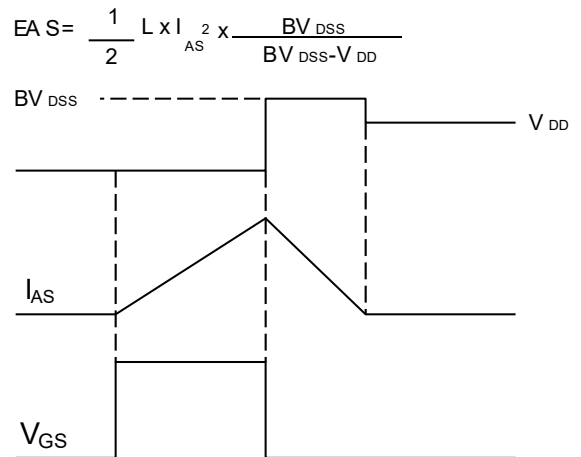
**Fig.5 Normalized Transient Impedance**



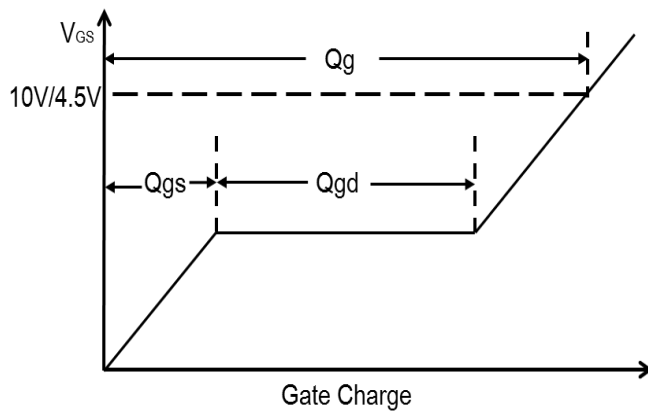
**Fig.6 Maximum Safe Operation Area**



**Fig.7 Switching Time Waveform**

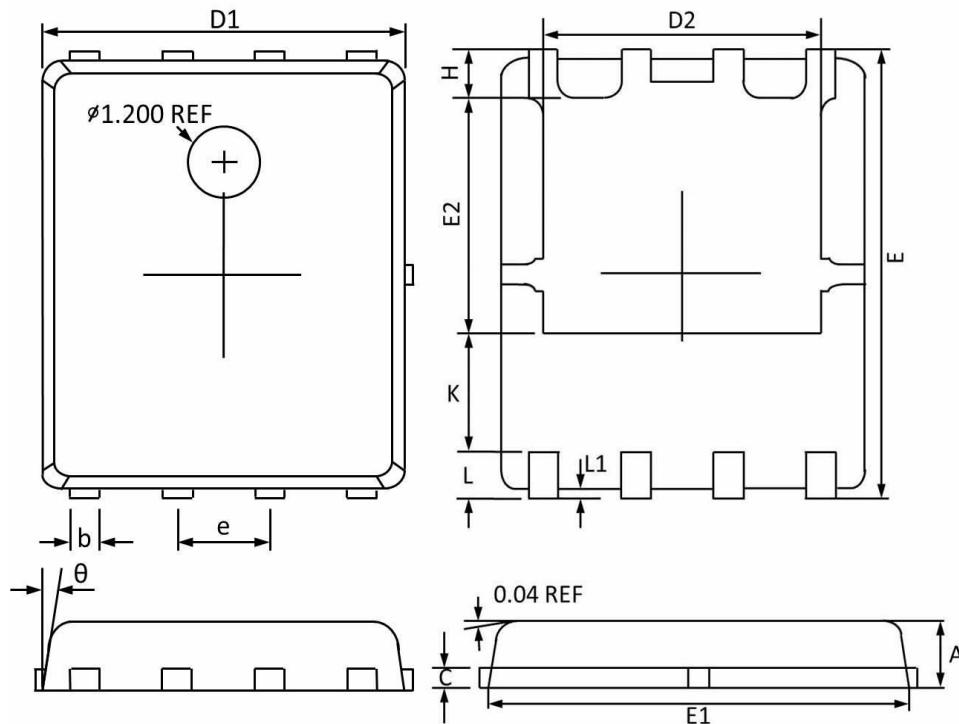


**Fig.8 EAS Waveform**



**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
$\theta$	12°	0°	12°	0°