| V_{DSS}	-30V
$R_{DS(on)}$(typ.)	14.5mΩ
I_D	-30A
P_D	27W

Features

- - 30V,-30A, RDS(ON) =14.5mΩ@VGS = 10V
- *Improved dv/dt capability*
- *Fast switching*
- *100% EAS Guaranteed*
- *Green Device Available*

Applications

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

Outline

P PAK 3x3

(1) Source
(2) Source
(3) Source
(4) Gate
(5) Drain
(6) Drain
(7) Drain
(8) Drain
*1 Body Diode
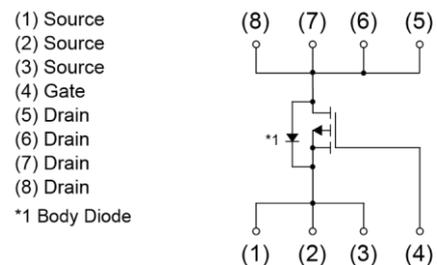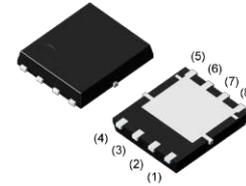
Type	Reel size (mm)	330
	Tape width (mm)	12
	Basic ordering unit (pcs)	5000
	Taping code	D3
	Marking	AD30P30D3

Absolute Maximum Ratings Tc=25℃ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current – Continuous (T$_C$=25℃)	-30	A
	Drain Current – Continuous (T$_C$=100℃)	-19	A
I_{DM}	Drain Current – Pulsed[1]	-120	A
P_D	Power Dissipation (T$_C$=25℃)	27	W
	Power Dissipation – Derate above 25℃	0.22	W/℃
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{θJA}$	Thermal Resistance Junction to ambient	---	62	℃/W
$R_{θJC}$	Thermal Resistance Junction to Case	---	4.6	℃/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	-30	---	---	V
$\triangle BV_{DSS}/\triangle T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=-1mA	---	-0.03	---	V/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-27V, V_{GS}=0V , T_J=25℃	---	---	-1	uA
		V_{DS}=-24V, V_{GS}=0V , T_J=125℃	---	---	-10	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA

On Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=-10V , I_D=-8A	---	14.5	18	mΩ
		V_{GS}=-4.5V , I_D=-6A	---	23	30	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D=-250uA	-1.2	-1.6	-2.5	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	4	---	mV/℃
gfs	Forward Transconductance	V_{DS}=-10V , I_D=-8A	---	6.8	---	S

Dynamic and switching Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q_g	Total Gate Charge[2,3]	V_{DS}=-15V , V_{GS}=-4.5V , I_D=-5A	---	11	17	nC
Q_{gs}	Gate-Source Charge[2,3]		---	3.4	6	
Q_{gd}	Gate-Drain Charge[2,3]		---	4.2	8	
$T_{d(on)}$	Turn-On Delay Time[2,3]	V_{DD}=-15V , V_{GS}=-10V , R_G=6Ω I_D=-1A	---	5.8	11	ns
T_r	Rise Time[2,3]		---	18.8	36	
$T_{d(off)}$	Turn-Off Delay Time[2,3]		---	46.9	90	
T_f	Fall Time[2,3]		---	12.3	23	
C_{iss}	Input Capacitance	V_{DS}=-15V , V_{GS}=0V , F=1MHz	---	1250	2500	pF
C_{oss}	Output Capacitance		---	160	320	
C_{rss}	Reverse Transfer Capacitance		---	90	180	

Drain-Source Diode Characteristics and Maximum Ratings

| Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	-30	A
I_{SM}	Pulsed Source Current		---	---	-60	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=-1A , T_J=25℃	---	---	-1	V

Note :
1.Repetitive Rating : Pulsed width limited by maximum junction temperature.
2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
3.Essentially independent of operating temperature.
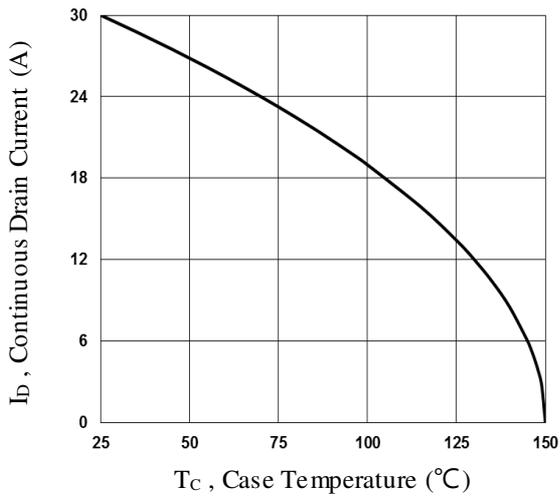
Fig.1   Continuous Drain Current vs. T$_C$
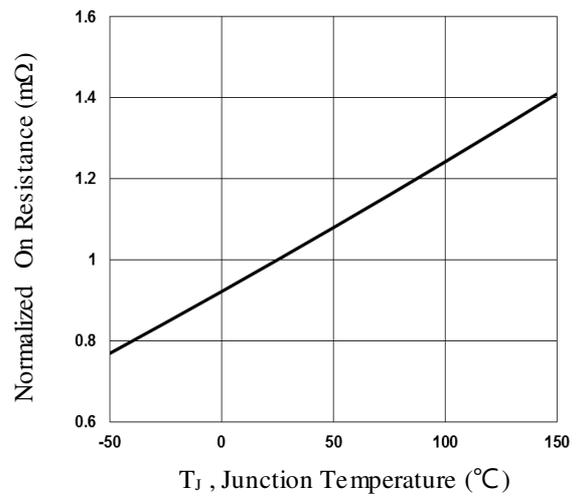

Fig.2   Normalized RDSON vs. T$_J$
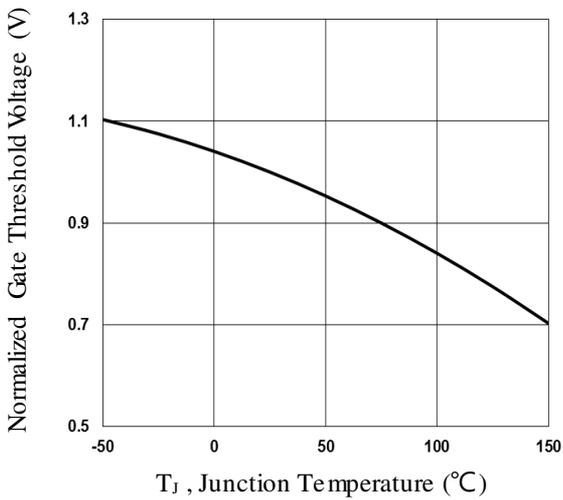
Fig.3   Normalized V$_{th}$ vs. T$_J$
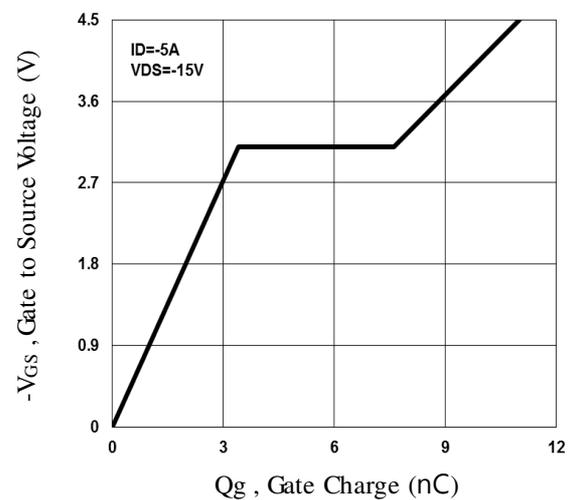
Fig.4   Gate Charge Waveform
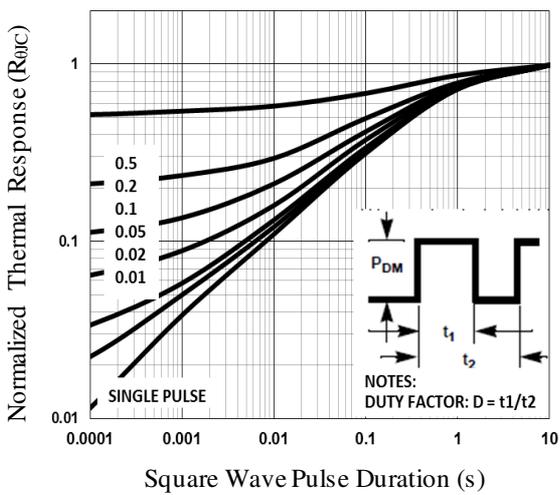
Fig.5   Normalized Transient Impedance
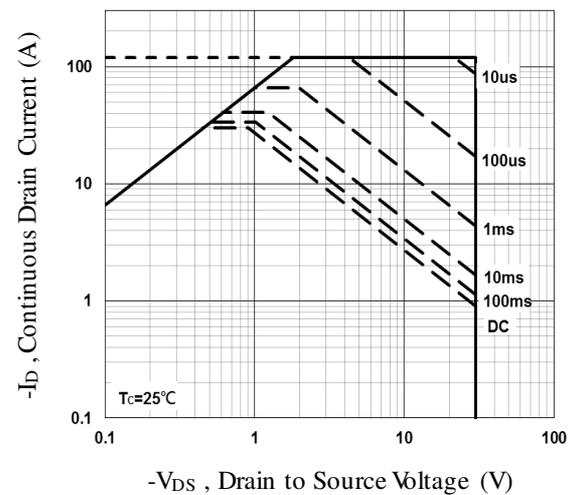

Fig.6   Maximum Safe Operation Area

-V_DS

90%

10%

-V_GS

T_d(on) | T_r | T_d(off) | T_f

T_on | T_off
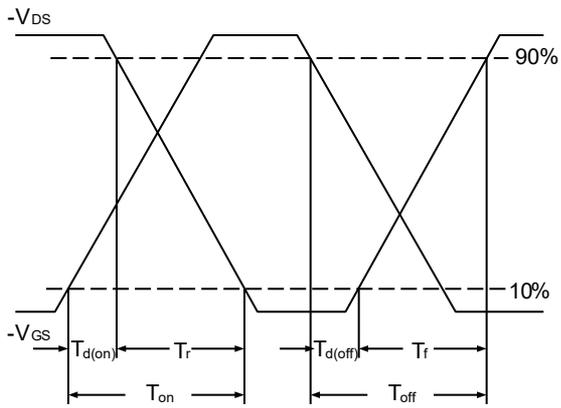
Fig.7
Switc hing Time Waveform

-V_GS

-10V / -4.5V

Qg

Qgs | Qgd
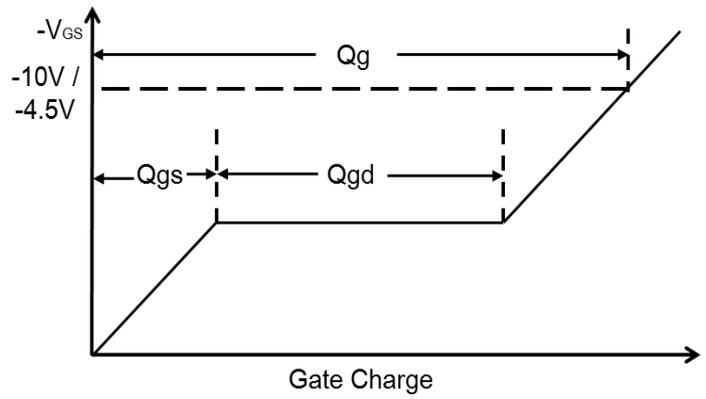
Gate Charge

Fig.8   Gate Charge Waveform

PPAK3x3 PACKAGE INFORMATION
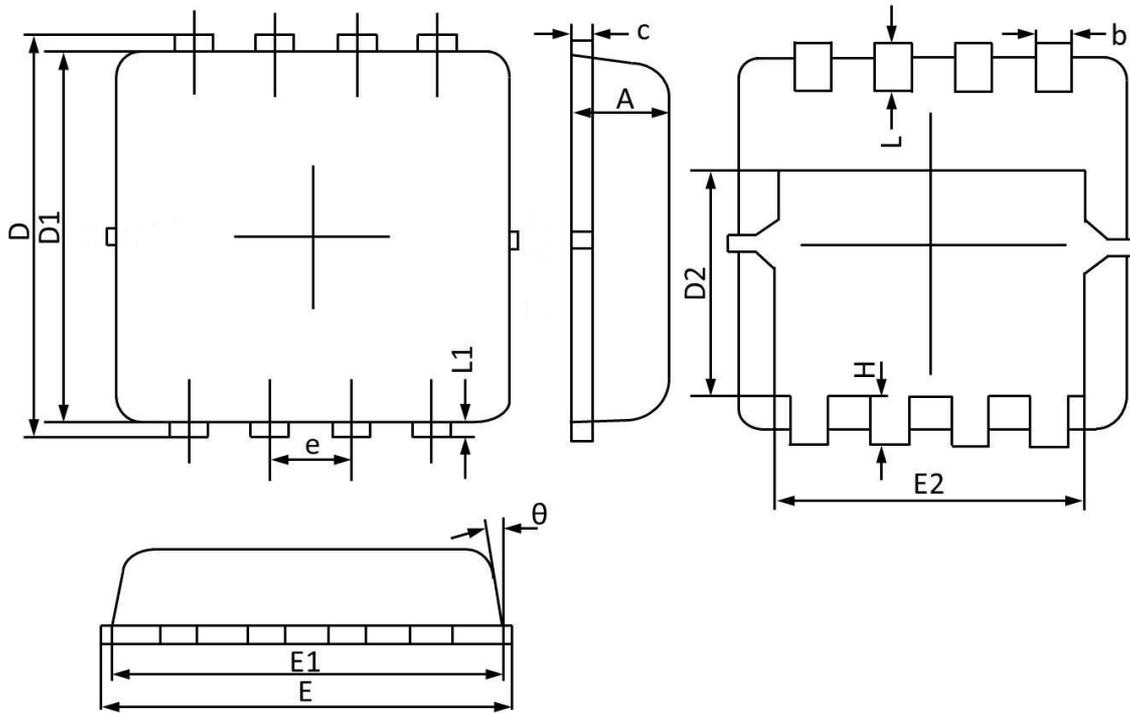
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	0.900	0.700	0.035	0.028
b	0.350	0.240	0.014	0.009
c	0.250	0.100	0.010	0.004
D	3.450	3.050	0.136	0.120
D1	3.200	2.900	0.126	0.114
D2	1.850	1.350	0.073	0.053
E	3.400	3.000	0.134	0.118
E1	3.250	2.900	0.128	0.114
E2	2.600	2.350	0.102	0.093
e	0.65BSC		0.026BSC	
H	0.500	0.300	0.020	0.012
L	0.500	0.300	0.020	0.012
L1	0.200	0.070	0.008	0.003
θ	12°	0°	12°	0°