AD30N65D5

Nch 30V 65A Power MOSFET

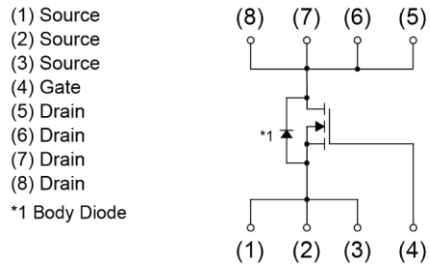
Datasheet

V_{DSS}	30V
$R_{DS(on)}$(typ.)	6.2mΩ
I_D	65A
P_D	54W

Outline

P PACK 5X6

Inner circuit



Features

1)Low on - resistance
2)High power package (P PAK5X6)
3)Pb-free lead plating ; RoHS compliant
4)Halogen free
5)100% Rg and UIS tested

Application

Switching

Packaging specifications

Type	Packing	Embossed Tape
	Reel size (mm)	330
	Tape width (mm)	12
	Basic ordering unit (pcs)	5000
	Taping code	D5
	Marking	AD30N65D5

Absolute maximum ratings(T_a = 25°C)

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℃)	65	A
	Drain Current – Continuous (T_C=100℃)	41	A
I_{DM}	Drain Current – Pulsed[1]	260	A
EAS	Single Pulse Avalanche Energy[2]	45	mJ
IAS	Single Pulse Avalanche Current[2]	30	A
P_D	Power Dissipation (T_C=25℃)	54	W
	Power Dissipation – Derate above 25℃	0.43	W/℃
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

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

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

Static State 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	---	0.04	---	V/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=30V , 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
$R_{DS(ON)}$	Static Drain-Source On-Resistance[3]	V_{GS}=10V , I_D=16A	---	6.2	7.2	mΩ
		V_{GS}=4.5V , I_D=8A	---	8.9	11.5	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	---	9.5	---	S

Dynamic Characteristics

Q_g	Total Gate Charge[3,4]	V_{DS}=15V , V_{GS}=4.5V , I_D=20A	---	7.5	12	nC
Q_{gs}	Gate-Source Charge[3,4]		---	4.5	8	
Q_{gd}	Gate-Drain Charge[3,4]		---	1.3	2.6	
$T_{d(on)}$	Turn-On DelayTime[3,4]	V_{DD}=15V , V_{GS}=10V , R_G=3.3Ω	---	4.8	9	ns
T_r	Rise Time[3,4]	I_D=15A	---	12.5	24	
$T_{d(off)}$	Turn-Off DelayTime[3,4]		---	27.6	52	
T_f	Fall Time[3,4]		---	8.2	16	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , F=1MHz	---	680	1000	pF
C_{oss}	Output Capacitance		---	150	220	
C_{rss}	Reverse Transfer Capacitance		---	70	105	
R_g	Gate resistance	V_{GS}=0V, V_{DS}=0V, F=1MHz	---	2.7	5.4	Ω

Guaranteed Avalanche Energy

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
EAS	Single Pulse Avalanche Energy	V_{DD}=25V, L=0.1mH, IAS=15A	12	---	---	mJ

Drain-Source Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	65	A
I_{SM}	Pulsed Source Current[3]		---	---	130	A
V_{SD}	Diode Forward Voltage[3]	V_{GS}=0V , I_S=1A , T_J=25℃	---	---	1	V
t_{rr}	Reverse Recovery Time	V_{GS}=0V,I_S=10A , di/dt=100A/μs	---	8.1	---	ns
Q_{rr}	Reverse Recovery Charge	T_J=25℃	---	1.6	---	nC

Note :

1.Repetitive Rating : Pulsed width limited by maximum junction temperature.

2.V_{DD}=25V,V_{GS}=10V,L=0.1mH,I_{AS}=30A.,R_G=25Ω, Starting T_J=25℃.

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

4.Essentially independent of operating temperature.

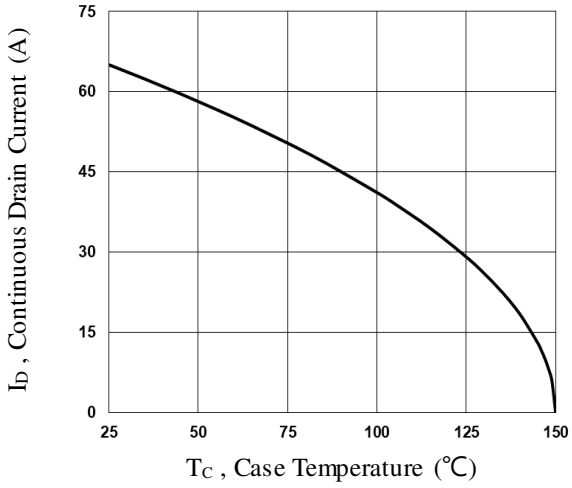


Fig.1 Continuous Drain Current vs. T_C

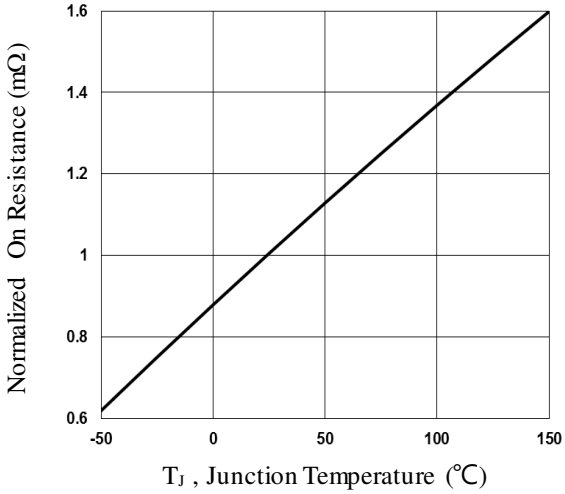


Fig.2 Normalized RDSON vs. T_J

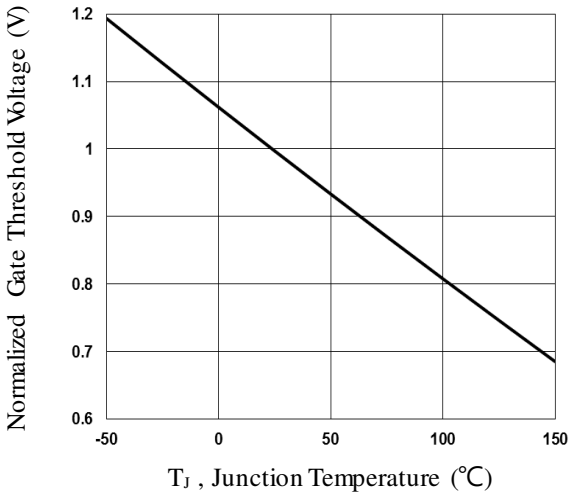


Fig.3 Normalized V_{th} vs. T_J

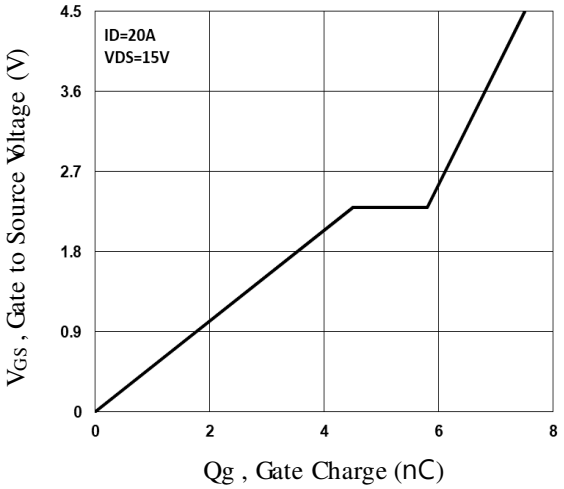


Fig.4 Gate Charge Waveform

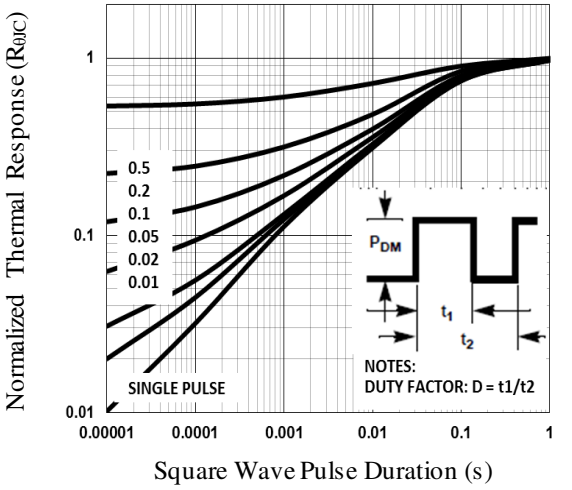


Fig.5 Normalized Transient Impedance

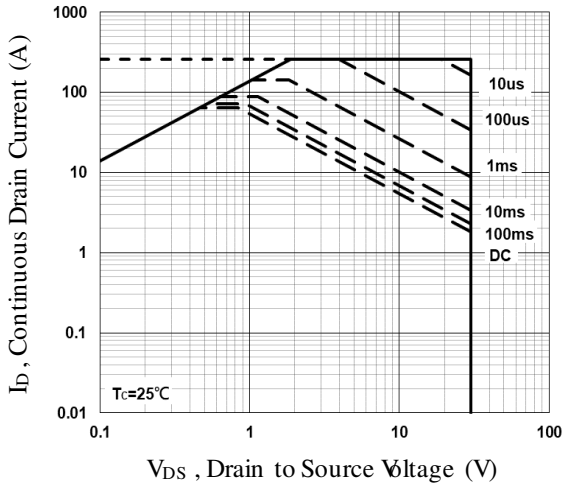


Fig.6 Maximum Safe Operation Area

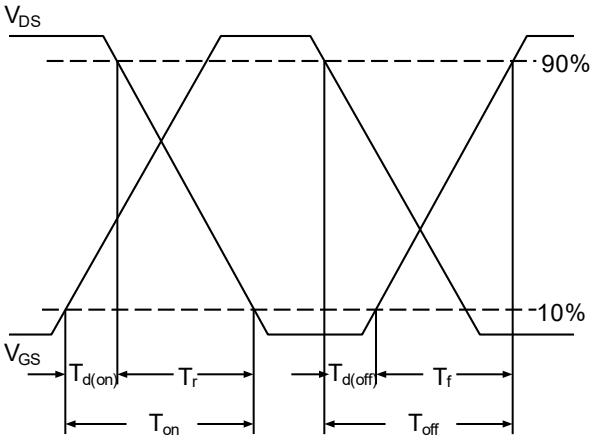


Fig.7 Switching Time Waveform

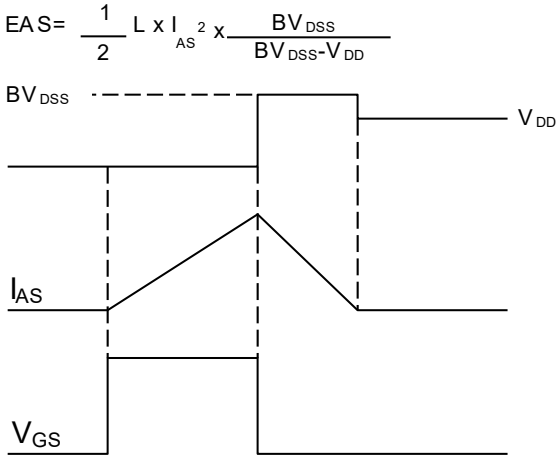
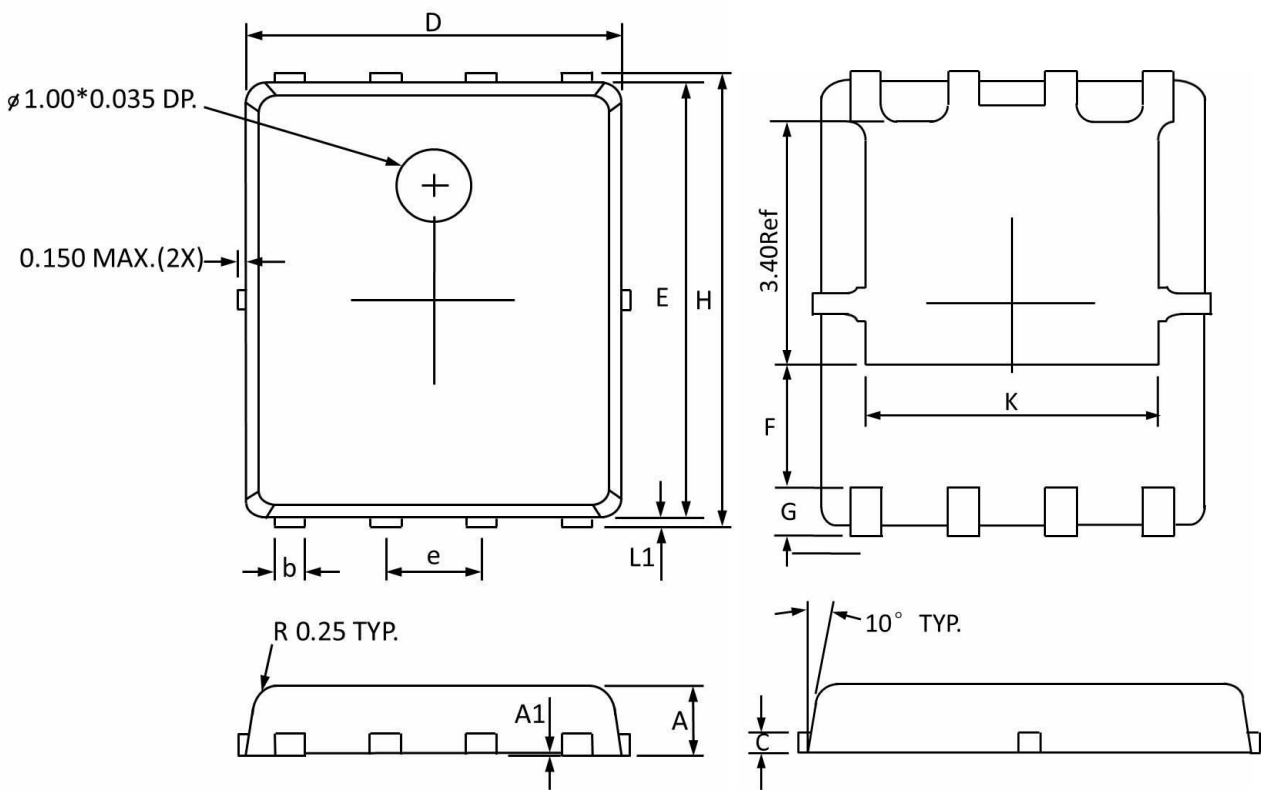


Fig.8 EAS Waveform

PPAK5x6 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.800	1.000	0.032	0.039
A1	0.000	0.005	0.000	0.000
b	0.350	0.490	0.014	0.019
C	0.254 Ref		0.254 Ref	
D	4.900	5.100	0.193	0.200
E	5.700	5.900	0.225	0.232
e	1.27 BSC		1.27 BSC	
F	1.400 Ref		1.400 Ref	
G	0.600 Ref		0.600 Ref	
H	5.950	6.200	0.235	0.244
L1	0.100	0.180	0.004	0.007
K	4.000 Ref		4.000 Ref	