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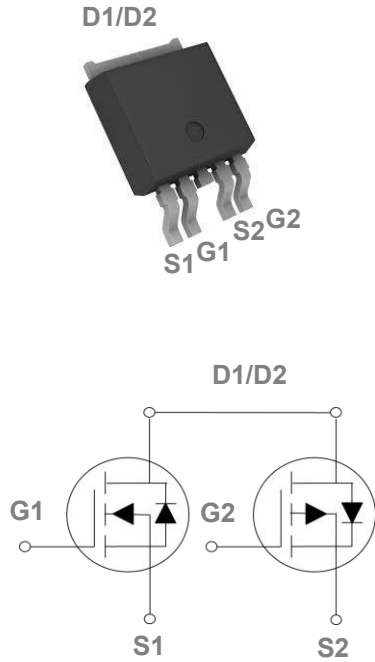
GDT



PLED

Product data sheet

T0252-4 Pin Configuration



Features

- Fast switching
- Green Device Available
- Suit for 4.5V Gate Drive Applications

Applications

- DC Fan
- Motor Drive Applications
- Networking
- Half / Full Bridge Topology

BVDSS	RDSON	ID
30V	15mΩ	16A
-30V	30mΩ	-12A

Symbol	Parameter	Rating		Units
V _{DS}	Drain-Source Voltage	30	-30	V
V _{GS}	Gate-Source Voltage	±20	±20	V
I _D	Drain Current – Continuous (T _C =25°C)	16	-12	A
	Drain Current – Continuous (T _C =100°C)	10.1	-7.6	A
I _{DM}	Drain Current – Pulsed ¹	64	-48	A
P _D	Power Dissipation (T _C =25°C)	32.5		W
	Power Dissipation – Derate above 25°C	0.26		W/°C
T _{STG}	Storage Temperature Range	-55 to 150		°C
T _J	Operating Junction Temperature Range	-55 to 150		°C

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction to ambient	---	62.5	°C/W
R _{θJC}	Thermal Resistance Junction to Case	---	3.84	°C/W

N-CH Electrical Characteristics (T_J=25 °C, 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
I _{DSS}	Drain-Source Leakage Current	V _{DS} =30V , V _{GS} =0V , T _J =25°C	---	---	1	uA
		V _{DS} =24V , V _{GS} =0V , T _J =125°C	---	---	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 =10A	---	15	30	mΩ
		V _{GS} =4.5V , I _D =5A	---	30	40	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	1.0	1.5	2.5	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient		---	-4	---	mV/°C
gfs	Forward Transconductance	V _{DS} =10V , I _D =3A	---	6	---	S

Dynamic and switching Characteristics

Q _g	Total Gate Charge ^{3, 4}	V _{DS} =15V , V _{GS} =4.5V , I _D =5A	---	7.4		nC
Q _{gs}	Gate-Source Charge ^{3, 4}		---	2.3		
Q _{gd}	Gate-Drain Charge ^{3, 4}		---	3		
T _{d(on)}	Turn-On Delay Time ^{3, 4}	V _{DD} =15V , V _{GS} =10V , R _G =6Ω I _D =1A	---	3.8		ns
T _r	Rise Time ^{3, 4}		---	10		
T _{d(off)}	Turn-Off Delay Time ^{3, 4}		---	22		
T _f	Fall Time ^{3, 4}		---	6.6		
C _{iss}	Input Capacitance	V _{DS} =25V , V _{GS} =0V , F=1MHz	---	620		pF
C _{oss}	Output Capacitance		---	85		
C _{riss}	Reverse Transfer Capacitance		---	60		
R _g	Gate resistance	V _{GS} =0V , V _{DS} =0V , f=1MHz	---	2.8		Ω

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	---	---	16	A
I _{SM}	Pulsed Source Current		---	---	32	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V , I _S =1A , T _J =25°C	---	---	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.

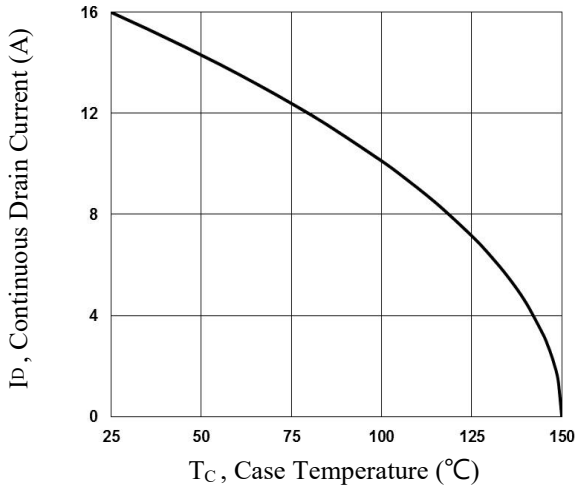


Fig.1 Continuous Drain Current vs. T_c

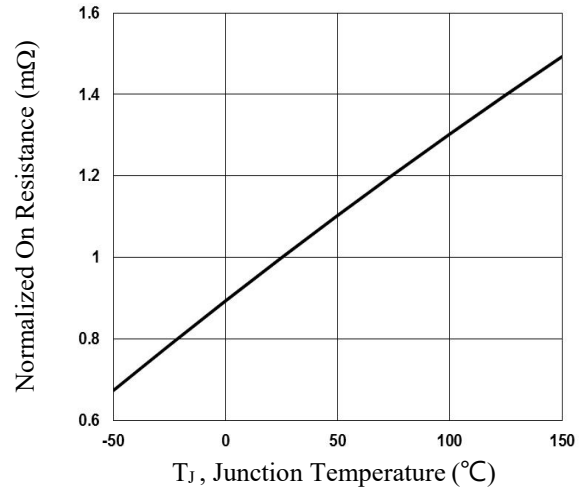


Fig.2 Normalized R_{DS(on)} vs. T_j

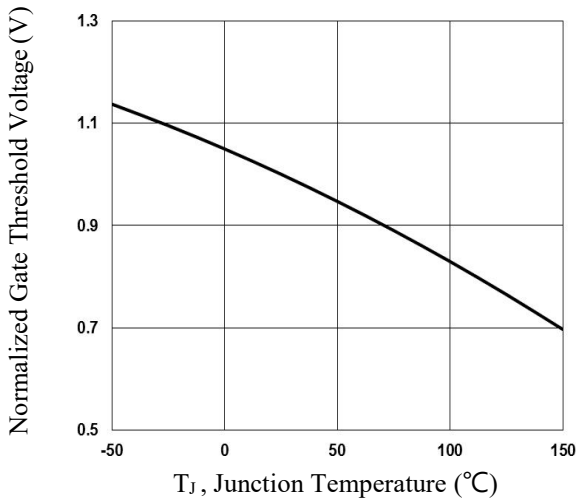


Fig.3 Normalized V_{th} vs. T_j

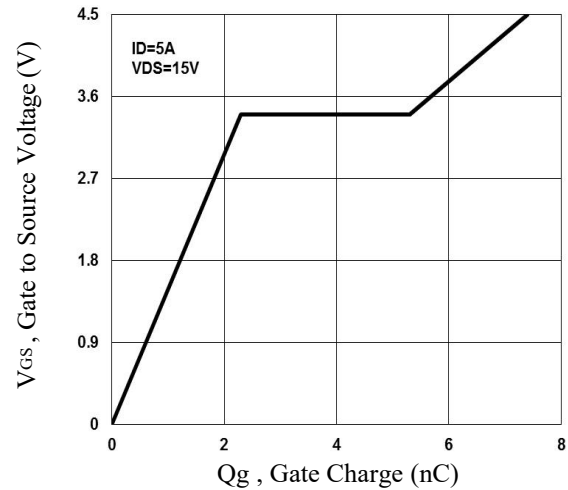


Fig.4 Gate Charge Waveform

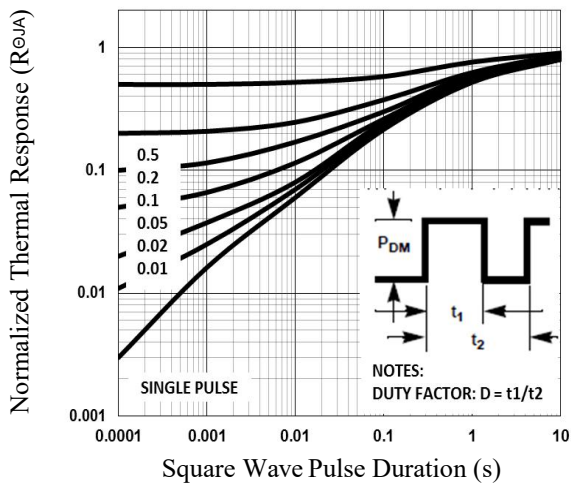


Fig.5 Normalized Transient Response

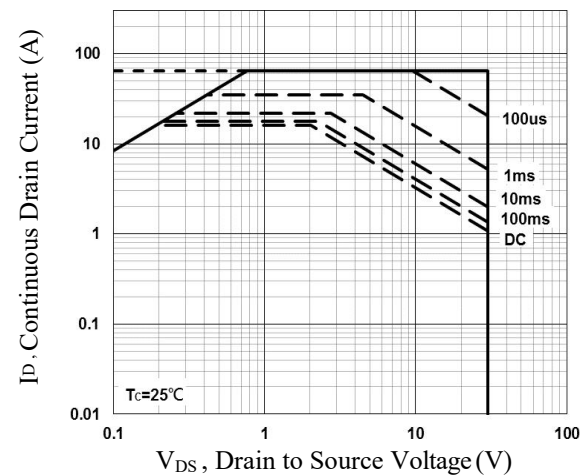


Fig.6 Maximum Safe Operation Area

P-CH Electrical Characteristics (T_J=25 °C, 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
ΔBV _{DSS} /ΔT _J	BV _{DSS} Temperature Coefficient	Reference to 25°C, I _D =-1mA	---	-0.03	---	V/°C
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-30V, V _{GS} =0V, T _J =25°C	---	---	-1	uA
		V _{DS} =-24V, V _{GS} =0V, T _J =125°C	---	---	-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 =-7A	---	30	40	mΩ
		V _{GS} =-4.5V, I _D =-4A	---	45	68	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-1	-1.5	-2.5	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient		---	4	---	mV/°C
g _{fs}	Forward Transconductance	V _{DS} =-10V, I _D =-3A	---	9	---	S

Dynamic and switching Characteristics

Q _g	Total Gate Charge ^{2,3}	V _{DS} =-15V, V _{GS} =-4.5V, I _D =-5A	---	8		nC
Q _{gs}	Gate-Source Charge ^{2,3}		---	3.3		
Q _{gd}	Gate-Drain Charge ^{2,3}		---	2.3		
T _{d(on)}	Turn-On Delay Time ^{2,3}	V _{DD} =-15V, V _{GS} =-10V, R _G =6Ω I _D =-1A	---	4.6		ns
T _r	Rise Time ^{2,3}		---	14		
T _{d(off)}	Turn-Off Delay Time ^{2,3}		---	34		
T _f	Fall Time ^{2,3}		---	18		
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, F=1MHz	---	757		pF
C _{oss}	Output Capacitance		---	122		
C _{rss}	Reverse Transfer Capacitance		---	88		

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	---	---	-12	A
I _{SM}	Pulsed Source Current		---	---	-24	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =-1A, T _J =25°C	---	---	-1.2	V

Note :

4. Repetitive Rating : Pulsed width limited by maximum junction temperature.
5. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
6. Essentially independent of operating temperature.

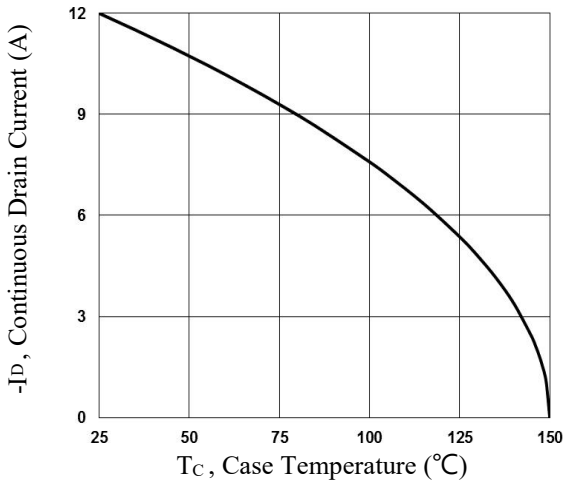


Fig.1 Continuous Drain Current vs. T_c

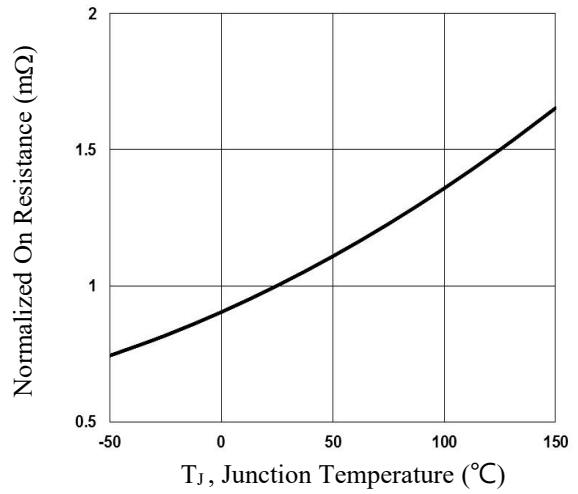


Fig.2 Normalized $R_{DS(on)}$ vs. T_j

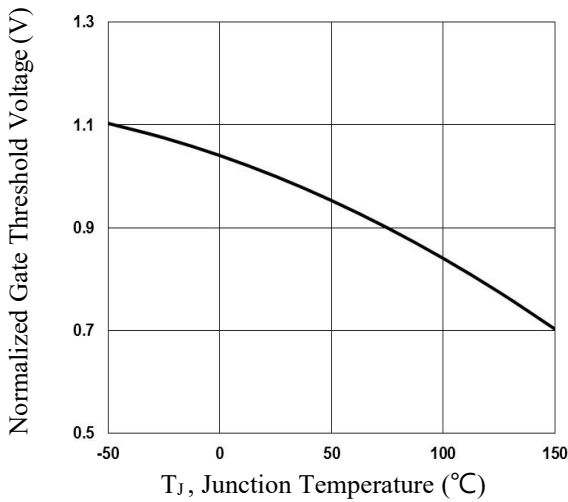


Fig.3 Normalized V_{th} vs. T_j

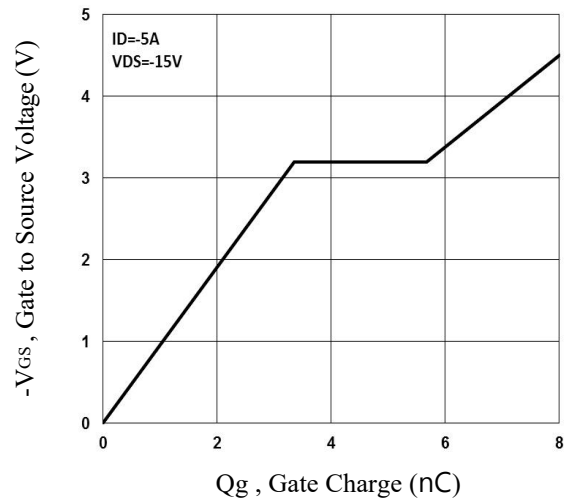


Fig.4 Gate Charge Waveform

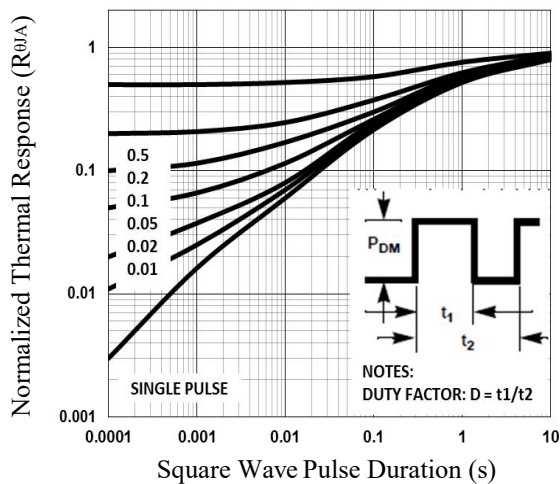


Fig.5 Normalized Transient Impedance

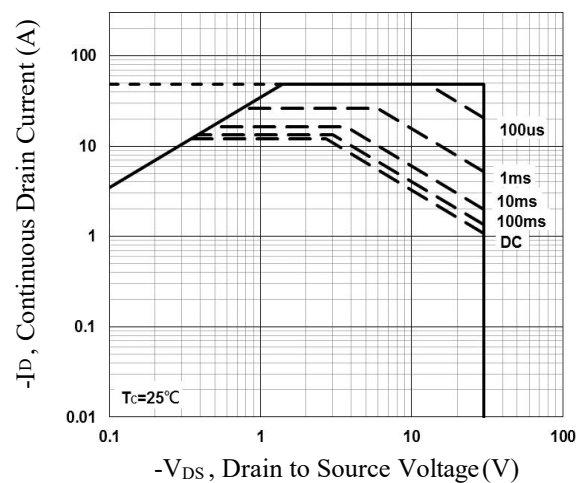
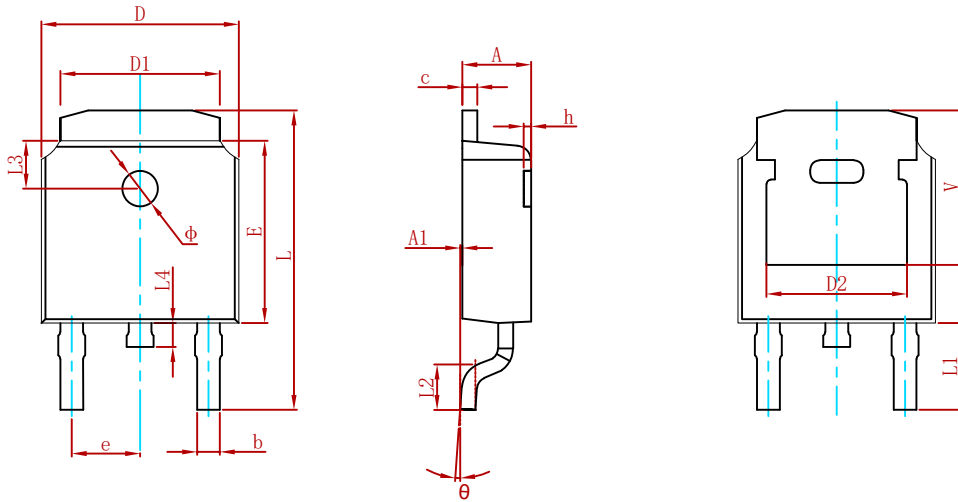


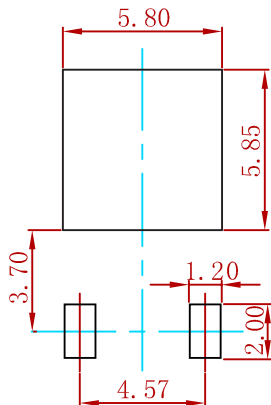
Fig.6 Maximum Safe Operation Area

PACKAGE MECHANICAL DATA



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.635	0.770	0.025	0.030
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.712	10.312	0.382	0.406
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.250 REF.		0.207 REF.	

Suggested Pad Layout



- Note:
1. Controlling dimension: in millimeters.
 2. General tolerance: ± 0.05mm.
 3. The pad layout is for reference purposes only.

REEL SPECIFICATION

P/N	PKG	QTY
AOD607-MS	TO-252-4	2500

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