

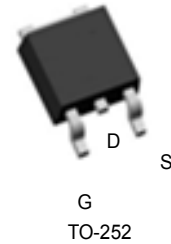
**30V/50A N-Channel Advanced Power MOSFET****Features**

- Low $R_{DS(on)}$
- 5V Logic Level Control
- TO-252 SMD Package

Applications

- High Side Load Switch
- Battery Switch
- Optimized for Power Management Applications for Portable Products, such as Aeromodelling, Power bank, Brushless motor, Main board , and Others

BVDSS	30	V
ID	50	A
$R_{DS(on)}@V_{GS}=10V$	10	mΩ
$R_{DS(on)}@V_{GS}=5V$	13	mΩ

**Order Information**

Product	Package	Marking	Packing
PTD3004	TO-252	PTD3004	2500PCS/REF

Absolute Maximum Ratings

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Symbol	Parameter		Rating	Unit
Common Ratings (T _c =25°C Unless Otherwise Noted)				
V _{GS}	Gate-Source Voltage		±20	V
V _{(BR)DSS}	Drain-Source Breakdown Voltage		30	V
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	°C
I _S	Diode Continuous Forward Current	T _C =25°C	50	A
Mounted on Large Heat Sink				
I _{DM}	Pulse Drain Current Tested (Sillicon Limit)	T _C =25°C	140	A
I _D	Continuous Drain current @V _{GS} =10V (Note 2)	T _C =25°C	50	A
P _D	Maximum Power Dissipation	T _C =25°C	32	W
EAS	Avalanche Energy, Single Pulsed (Note 3)		220	mJ
R _{θJC}	Thermal Resistance <i>Junction-to-Case</i> ≤ 5 s (Note 1)		3.9	°C/W

Note :

1. Surface-mounted on FR4 board using 1 in sq. pad size (Cu area = 1.127 in sq. [2 oz] including traces).
2. Pulse Test: pulse width ≤ 300 us, duty cycle $\leq 2\%$
3. Limited by T_{jmax} , starting $T_J = 25^\circ\text{C}$, $L = 0.1\text{mH}$, $R_G = 25\Omega$, $I_{AS} = 35A$, $V_{GS} = 10V$. Part not recommended for use above this value



30V/50A N-Channel Advanced Power MOSFET

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ T _J = 25°C (unless otherwise stated)						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	VGS=0V ID=250μA	30	--	--	V
I _{DSS}	Zero Gate Voltage Drain current(Tc=25°C)	VDS=24V,VGS=0V	--	--	1	μA
I _{GSS}	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
V _{GS(TH)}	Gate Threshold Voltage	VDS=VGS,ID=250μA	1.2	1.8	2.5	V
R _{DS(ON)}	Drain-Source On-State Resistance note A	VGS=10V, ID=30A		7.5	10	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance note A	VGS=5V, ID=20A	--	9	13	mΩ
Dynamic Electrical Characteristics @ T _J = 25°C (unless otherwise stated) note B						
C _{iss}	Input Capacitance	VDS=15V,VGS=0V, f=1MHz	--	1070	--	pF
C _{oss}	Output Capacitance		--	158	--	pF
C _{rss}	Reverse Transfer Capacitance		--	135	--	pF
Q _g	Total Gate Charge	VDS=15V,ID=10A, VGS=10V	--	20	--	nC
Q _{gs}	Gate-Source Charge		--	7.8	--	nC
Q _{gd}	Gate-Drain Charge		--	5	--	nC
Switching Characteristics note B						
t _{d(on)}	Turn-on Delay Time	VDD=15V, ID=10A, RG=4.7Ω, VGS=10V	--	16	--	nS
t _r	Turn-on Rise Time		--	7	--	nS
t _{d(off)}	Turn-Off Delay Time		--	9	--	nS
t _f	Turn-Off Fall Time		--	5	--	nS
Source- Drain Diode Characteristics@ T _J = 25°C (unless otherwise stated)						
I _{SD}	Source-drain current(Body Diode)	Tc=25°C	--	--	50	A
V _{SD}	Forward on voltage	IS=20A,VGS=0V	--	0.82	1.2	V
t _{rr}	Reverse Recovery Time	Tj=25°C,ISD=20A, VGS=0V	--	22	--	nS
Q _{rr}	Reverse Recovery Charge	di/dt=100A/μs	--	15	--	nC

Note:

A: Pulse Test: pulse width $\leq 300 \mu s$, duty cycle $\leq 2\%$

B: Guaranteed by design, not subject to production testing.

30V/50A N-Channel Advanced Power MOSFET Typical Characteristics

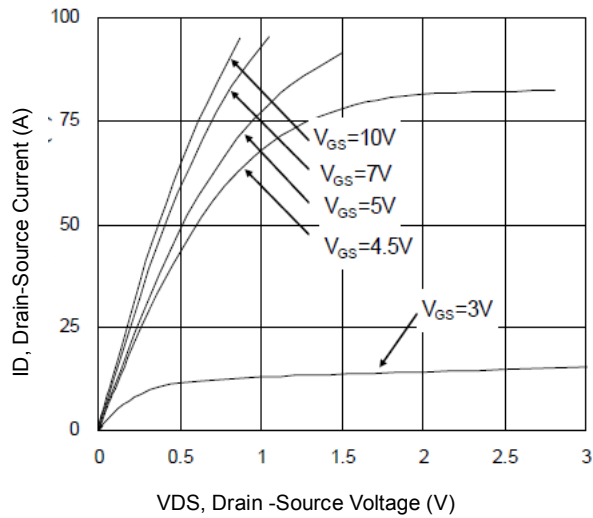


Fig1. Typical Output Characteristics

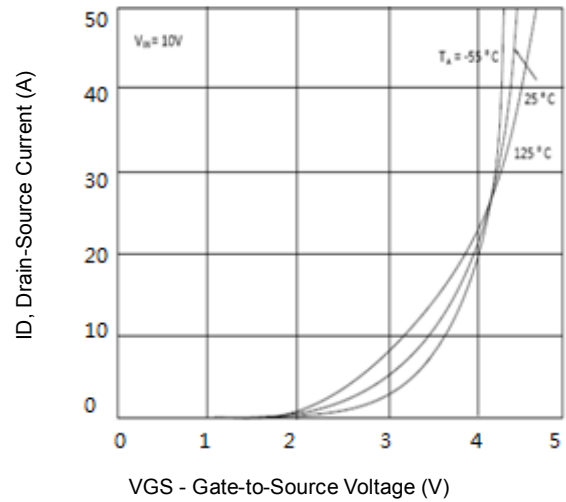


Fig2. Transfer Characteristics

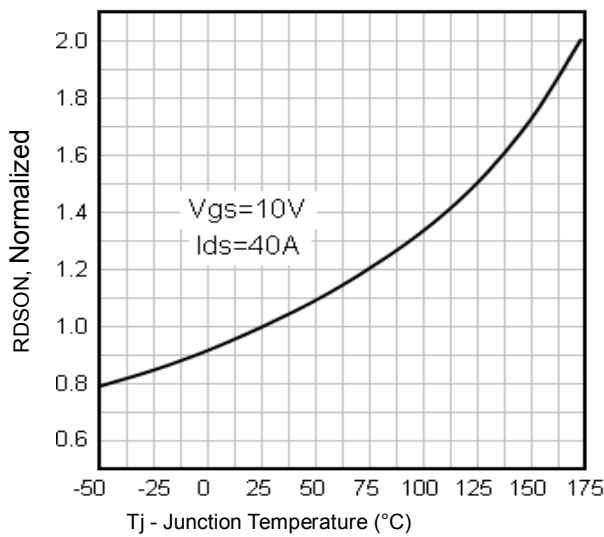


Fig3. Normalized On-Resistance Vs. Temperature

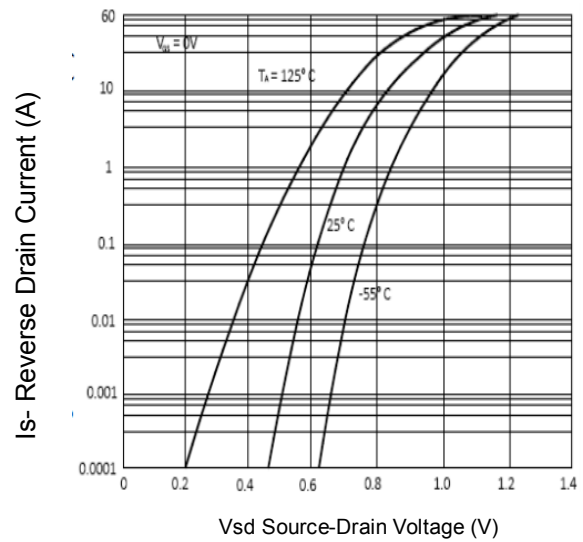


Figure4. Source- Drain Diode Forward

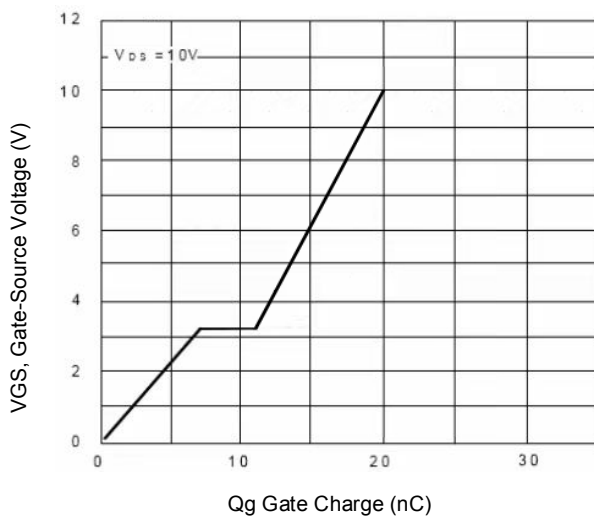


Figure 5. Gate Charge Vs. Gate-Source Voltage

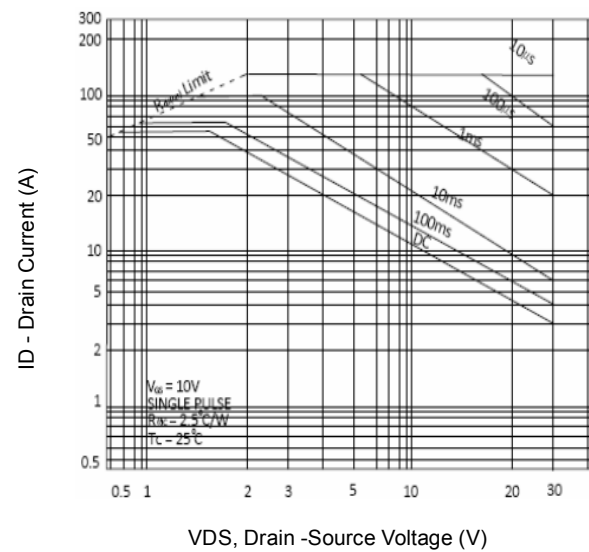


Fig6. Maximum Safe Operating Area

30V/50A N-Channel Advanced Power MOSFET

Typical Characteristics

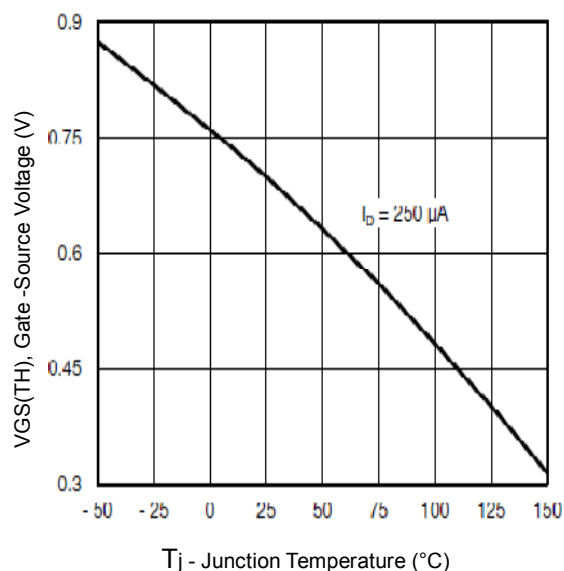


Fig7. Threshold Voltage Vs. Temperature

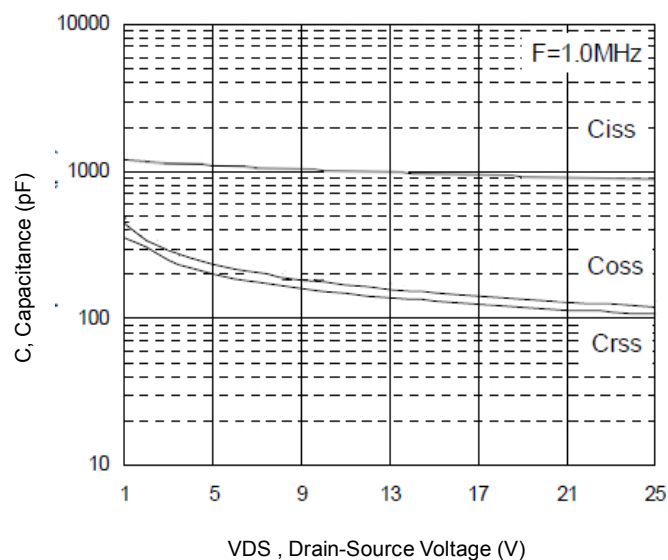


Fig8. Typical Capacitance Vs. Drain-Source Voltage

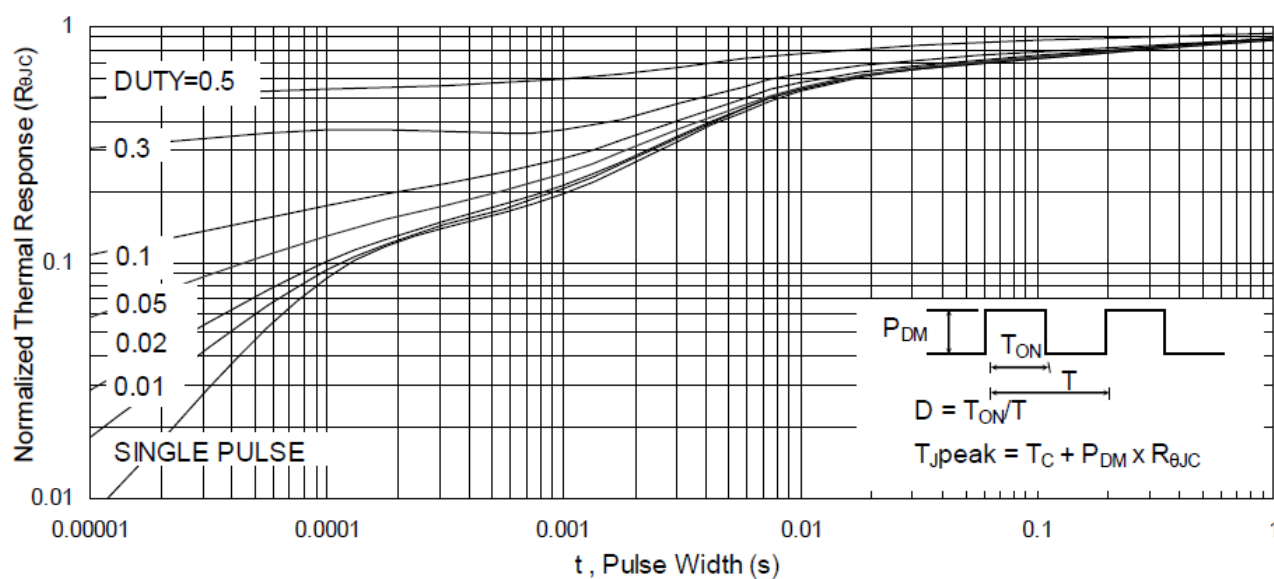


Fig9. Normalized Maximum Transient Thermal Impedance

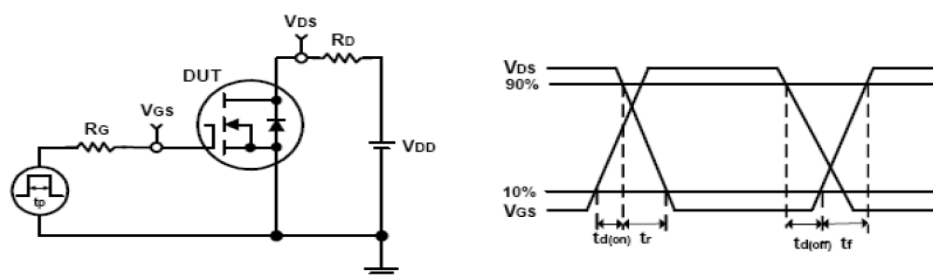
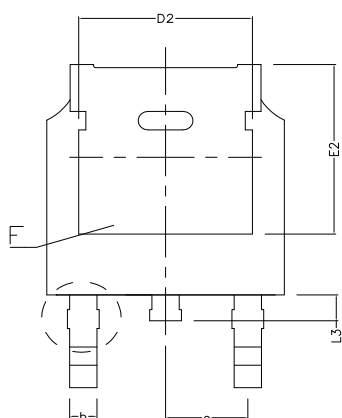


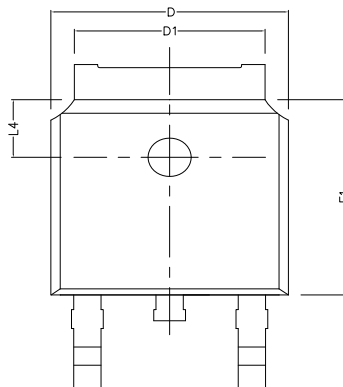
Fig10. Switching Time Test Circuit and waveforms



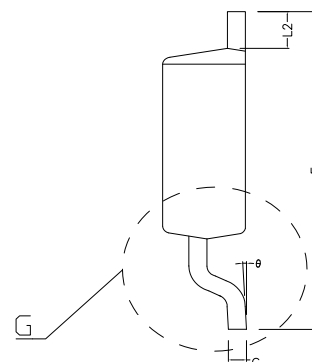
30V/50A N-Channel Advanced Power MOSFET
TO-252 Package Outline Dimensions (Units: mm)



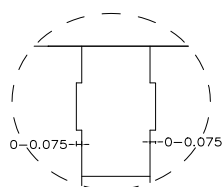
BOTTOM VIEW



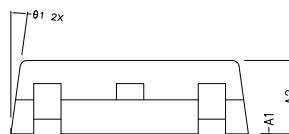
TOP VIEW



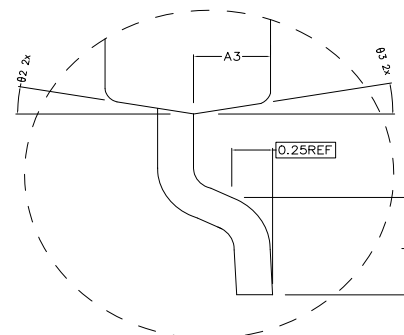
SIDE VIEW



DETAIL F



SIDE VIEW



DETAIL G

COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A1	0.000	0.100	0.150
A2	2.200	2.300	2.400
A3	1.020	1.070	1.120
b	0.710	0.760	0.810
c	0.460	0.508	0.550
D	6.500	6.600	6.700
D1	5.330REF		
D2	4.830REF		
E	9.900	10.100	10.300
E1	6.000	6.100	6.200
E2	5.600REF		
e	2.286TYPE		
L	1.400	1.550	1.700
L2	1.10REF		
L3	0.80REF		
L4	1.80REF		
theta	0~8°		
theta1	7° TYPE		
theta2	10° TYPE		
theta3	10° TYPE		