

PTS2017

20V/17A N-Channel Advanced Power MOSFET

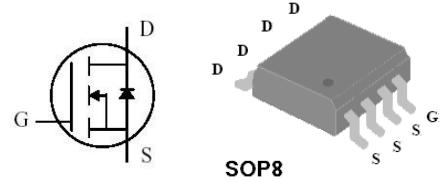
Features

- Very Low $R_{DS(on)}$ @ 3.3V Logic.
- 3.3V Logic Level Control
- SOP8 Package
- Pb-Free, RoHS Compliant

BVDSS	20	V
ID	17	A
$R_{DS(on)}@V_{GS}=4.5V$	5.5	mΩ
$R_{DS(on)}@V_{GS}=3.3V$	6.5	mΩ

Applications

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



Order Information

Product	Package	Marking	Packing	Min Unit Quantity
PTS2017	SOP8	PTS2017	3000PCS/Reel	6000PCS

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	±8	V	
V _{(BR)DSS}	Drain-Source Breakdown Voltage	20	V	
T _J	Maximum Junction Temperature	150	°C	
T _{STG}	Storage Temperature Range	-55 to 175	°C	
I _S	Diode Continuous Forward Current	T _c =25°C	17	A
Mounted on Large Heat Sink				
I _{DM}	Pulse Drain Current Tested (Silicon Limit)	T _c =25°C	68	A
I _D	Continuous Drain current@V _{GS} =4.5V (Note2)	T _c =25°C	17	A
P _D	Maximum Power Dissipation	T _c =25°C	2	W
R _{θJA}	Thermal Resistance Junction-to-Ambient – Steady State (Note 1)		65	°C/W
	Thermal Resistance Junction-to-Ambient –t ≤ 5 s (Note 1)		80	°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 ≤ 2%

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	8	--	--	V
I _{DSS}	Zero Gate Voltage Drain current(Tc=25°C)	VDS=16V,VGS=0V	--	--	1	μA
	Zero Gate Voltage Drain Current(Tc=125°C)	VDS=16V,VGS=0V	--	--	100	μA
I _{GSS}	Gate-Body Leakage Current	VGS=±8V,VDS=0V	--	--	±10	uA
V _{GS(TH)}	Gate Threshold Voltage	VDS=VGS, ID=250μA	0.45	0.70	1.20	V
R _{DS(ON)}	Drain-Source On-State Resistance note A	VGS=4.5V, ID=12A	--	5.5	7.5	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance note A	VGS=3.3V, ID=10A	--	6.5	8	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance note A	VGS=2.5V, ID=10A	--	7.5	9	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated) note B						
C _{iss}	Input Capacitance	VDS=5V,VGS=0V, f=1MHz	--	1550	--	pF
C _{oss}	Output Capacitance		--	140	--	pF
C _{rss}	Reverse Transfer Capacitance		--	105	--	pF
Q _g	Total Gate Charge	VGS=-4.5V	--	58	--	nC
		VGS=-2.5V	--	25	--	nC
Q _{gs}	Gate-Source Charge	VDS=5V,ID=10A, VGS=4.5V	--	18	--	nC
Q _{gd}	Gate-Drain Charge		--	12	--	nC
Switching Characteristics note B						
t _{d(on)}	Turn-on Delay Time	VDD=10V, ID=3A, RG=4.7Ω, VGS=4.5V	--	20	--	nS
t _r	Turn-on Rise Time		--	12	--	nS
t _{d(off)}	Turn-Off Delay Time		--	25	--	nS
t _f	Turn-Off Fall Time		--	18	--	nS
Source- Drain Diode Characteristics@ T_J = 25°C (unless otherwise stated)						
I _{SD}	Source-drain current(Body Diode)	Tc=25°C	--	--	20	A
V _{SD}	Forward on voltage	IS=10A,VGS=0V	--	0.8	1.2	V
t _{rr}	Reverse Recovery Time	Tj=25°C, ISD=1A, VGS=0V	--	2	--	nS
Q _{rr}	Reverse Recovery Charge		di/dt=100A/μs	--	5	--

Note:

A: Pulse Test: pulse width ≤ 300 us, duty cycle ≤ 2%

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

Typical Characteristics

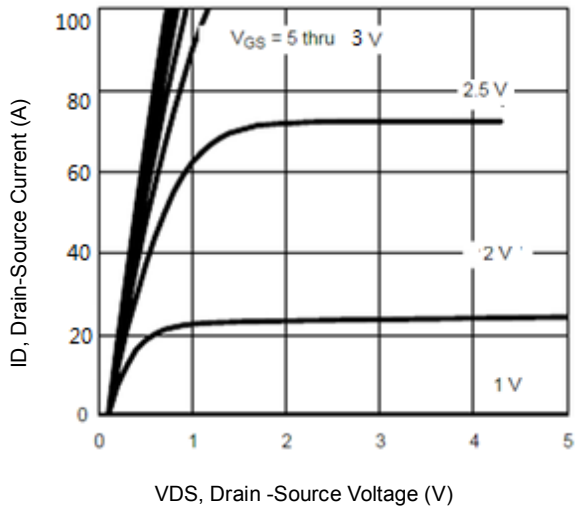


Fig1. Typical Output Characteristics

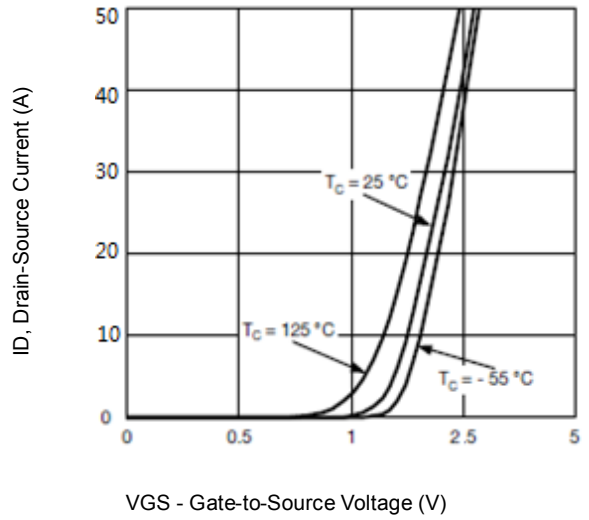


Fig2. Transfer Characteristics

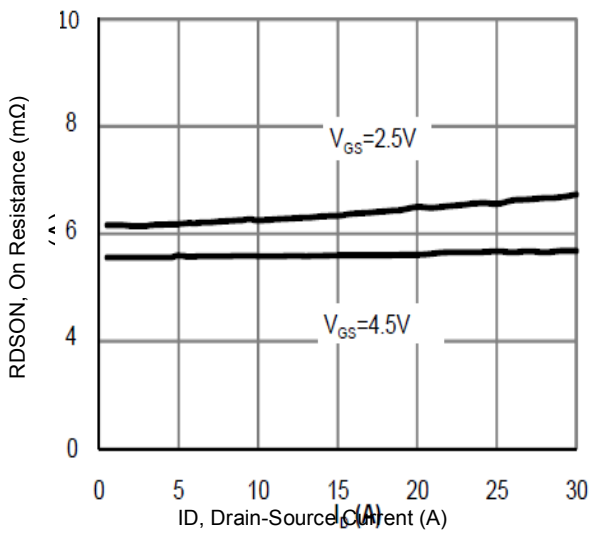


Fig3. On Resistance Vs. Gate-Source Voltage & Drain Current

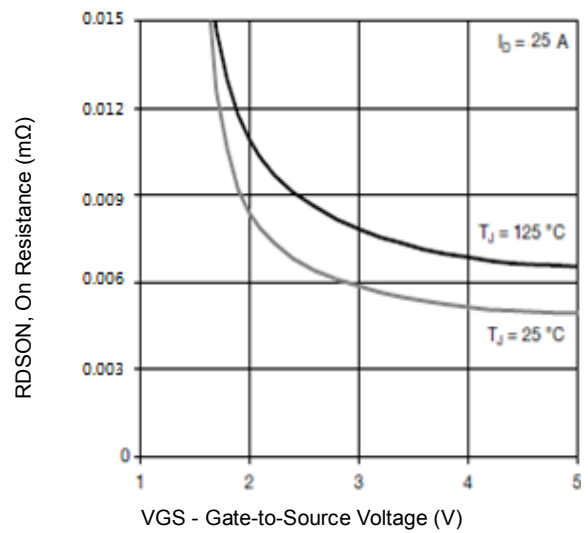


Fig4. Normalized On-Resistance Vs. Temperature

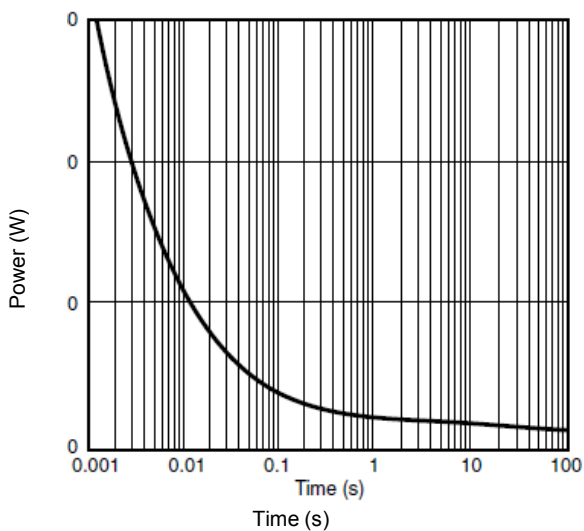


Fig5. Single Pulse Junction to Ambient

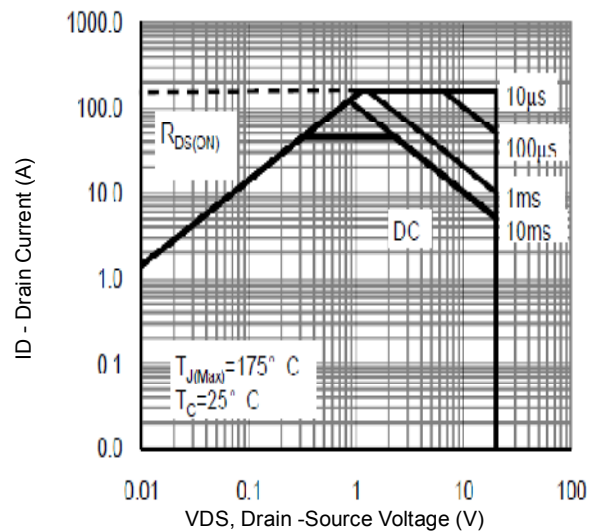


Fig6. Maximum Safe Operating Area

Typical Characteristics

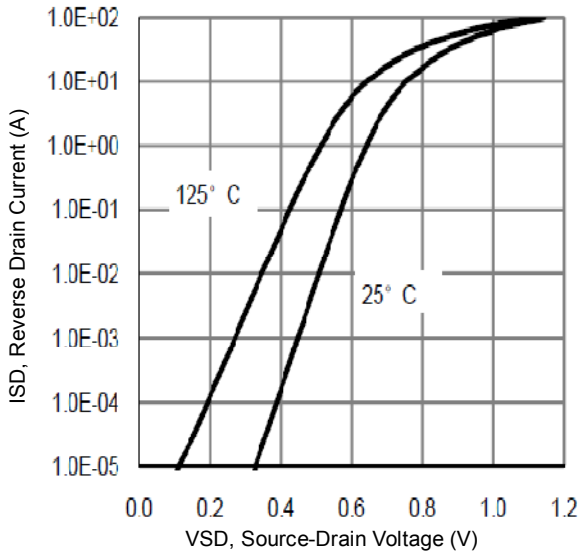


Fig7. Typical Source-Drain Diode Forward Voltage

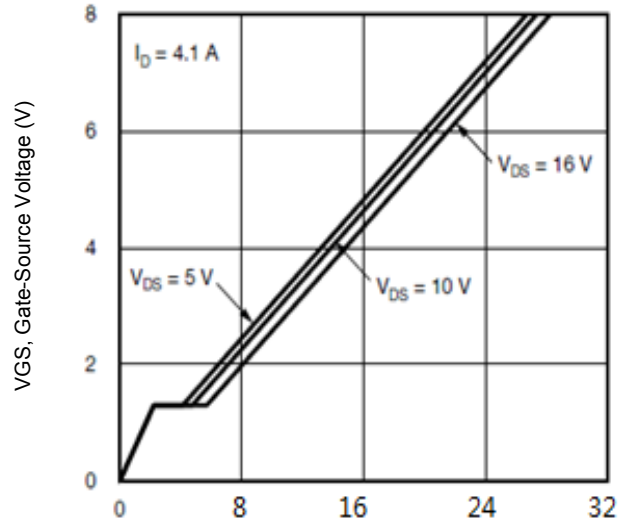


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

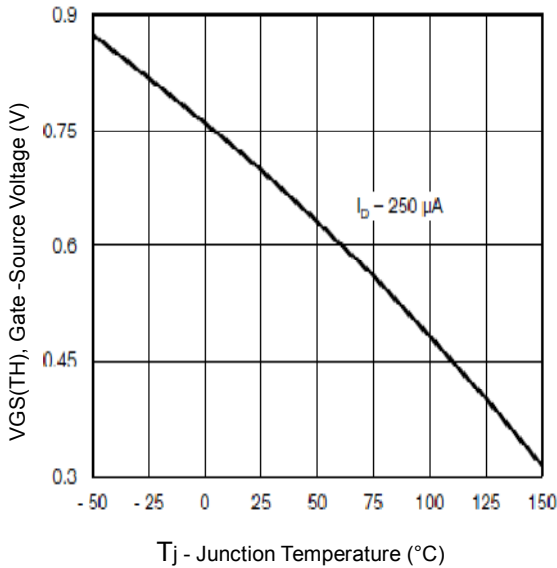


Fig9. Threshold Voltage Vs. Temperature

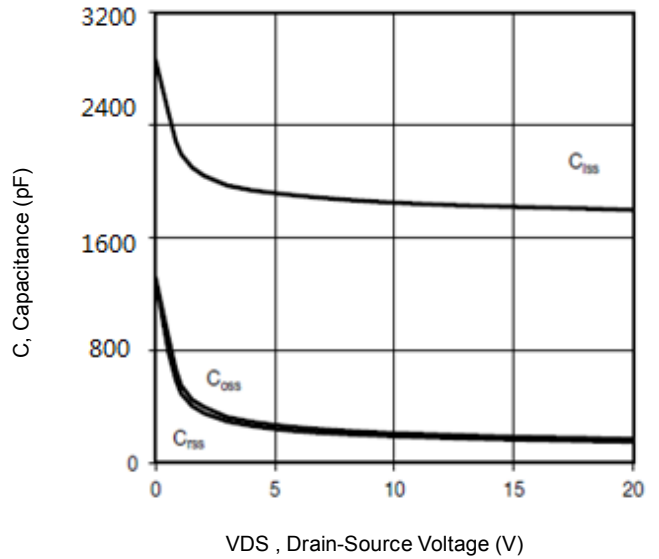


Fig10. Typical Capacitance Vs. Drain-Source Voltage

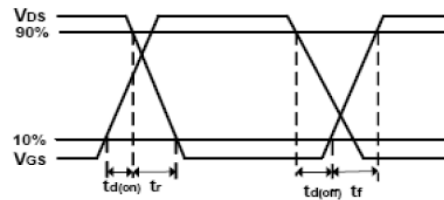
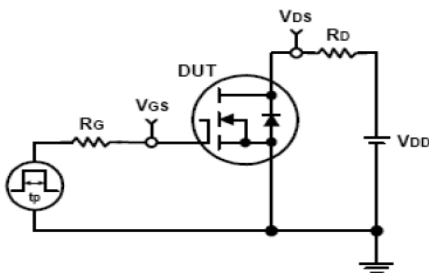


Fig11. Switching Time Test Circuit and waveforms