N-Channel Power MOSFET

General Description

The PW8205A is a dual N-channel MOS Field Effect Transistor which uses advanced trench technology to provide excellent RDS(on) , low gate charge and operation with low gate voltages. This device is suitable for use as a battery protection or in other switching application. PW8205A is packaged in a small TSSOP-8 package.

Features

- VDS(min) =20V
- ID (max)=4.5A
- Low on-state resistance
  RDS(on) = 20mΩ TYP.(VGS = 4.5V)
  RDS(on) = 23mΩ TYP. (VGS = 2.5V)
- Lead free product is acquired
- Surface Mount Package

Applications

- Battery protection
- Battery Powered Systems
- Power Management in Notebook Computer
- Portable Equipment

ORDERING INFORMATION

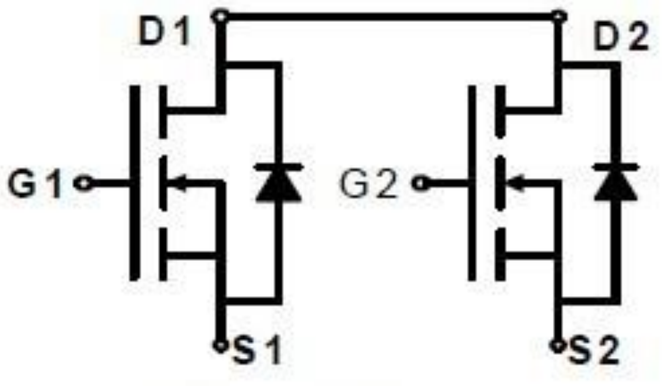
[Table-1] Ordering Information

DEVICE	PACKAGE	PIN COUNT	MARKING
PW8205A	TSSOP-8	8	PW8205A

PIN CONFIGURATIONS

Marking and pin Assignment

TSSOP-8 top view



Schematic diagram

ABSOLUTE MAXIMUM RATINGS

Drain-Source Voltage V_{DS}	20V	Storage Temperature Range T_{STG}	-55°C to 150°C
Gate-Source Voltage V_{GS}	±12V	Maximum Junction Temperature T_J	150°C
Drain Current-Continuous I_D	4.5A	Maximum Power Dissipation P_D	
Drain Current-Pulsed $I_{DM}^{(2)}$	18A	TSSOP-8(Thermal Resistance θ_{JA}=100°C/W)	1.2W

Note: (1) Stresses above those listed parameter may cause permanent damage to the device. These are stress ratings only and operation of the devices at these or any other conditions above this indicated in the operational section of this specification is not implied. Exposure to these listed ratings for extended periods may affect the reliability.

(2) Relative Rating: Pulse width limited by maximum junction temperature.

Electrical Characteristics (Ta=25℃)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source breakdown voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	20			V
Zero gate voltage drain current	I_{DSS}	V_{DS}=19.5V, V_{GS}=0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS}=±12V, V_{DS}=0V			±100	nA
ON CHARACTERISTICS(1)						
Gate threshold voltage	$V_{GS(TH)}$	V_{DS}= V_{GS}, I_D=250μA	0.55	0.7	0.95	V
Drain-source on-state resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=3A		20	23	mΩ
		V_{GS}=2.5V, I_D=2A		23	30	mΩ
DYNAMIC CHARACTERISTICS(2)						
Input capacitance	C_{ISS}	V_{DS}=10V, V_{GS}=0V, F=1.0MHz		465		PF
Output capacitance	C_{OSS}			99		PF
Reverse transfer capacitance	C_{RSS}			76		PF
SWITCHING CHARACTERISTICS(2)						
Turn-on delay time	$t_{d(ON)}$	V_{DD}= 10V, I_D=1A V_{GS}= 4.5V, R_{GEN}=10Ω		8		nS
Turn-on rise time	t_r			17		nS
Turn-off delay time	$t_{d(OFF)}$			19		nS
Turn-off fall time	t_f			12		nS
Total gate charge	Q_g	V_{DS}= 10V, I_D=4A V_{GS}= 4.5V		6.1		nC
Gate-source charge	Q_{gs}			0.9		nC
Gate-drain charge	Q_{gd}			1.8		nC
Drain-source diode characteristics						
Diode forward voltage(1)	V_{SD}	V_{GS}= 0V, I_S=2.8A		0.7	1.2	V
Diode forward current(3)	I_S				4.5	A

Note: (1) Pulse Test: pulse width ≤ 300μs, duty cycle ≤ 2%.
(2) Guaranteed by design, not subject to production.
(3) Surface mounted on FR4 board, t ≤10sec.

Typical characteristics (25℃ unless noted)

Figure 1 Output Characteristics

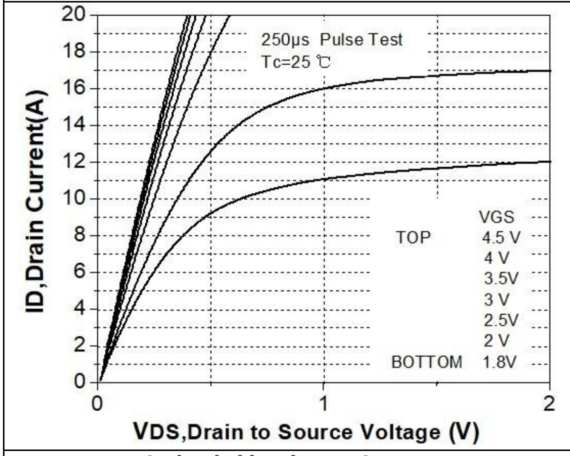


Figure 2 Transfer Characteristics

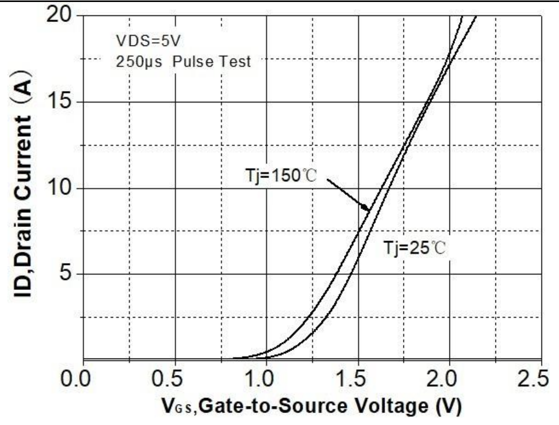


Figure 3 Threshold Voltage VS. Temperature

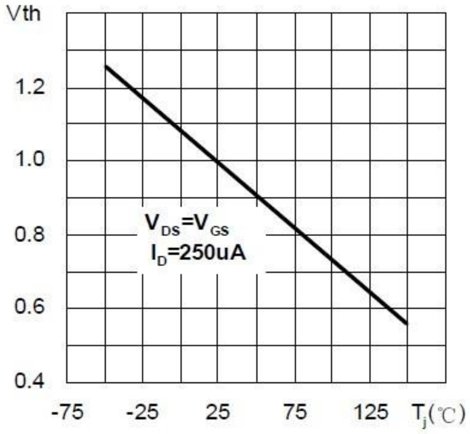


Figure 4 BVdss VS. Temperature

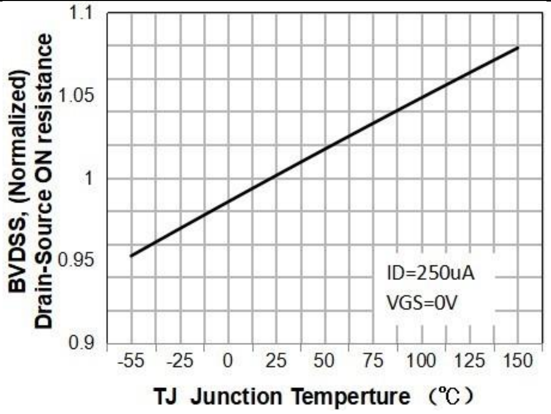


Figure 5 Rds(ON) VS. Temperature

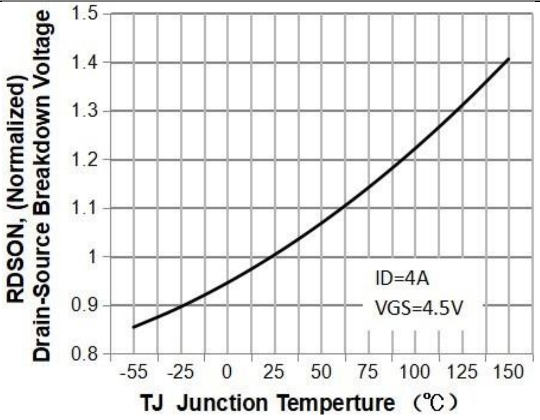


Figure 6 Source to Drain VS. Temperature

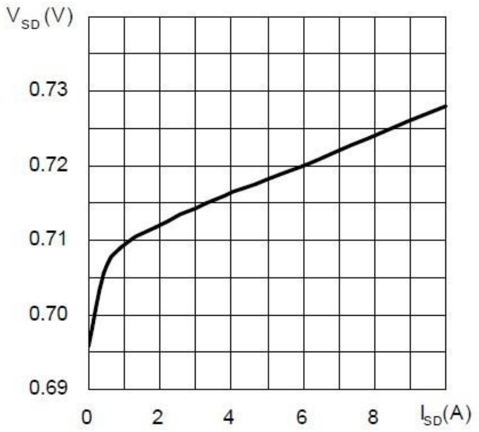
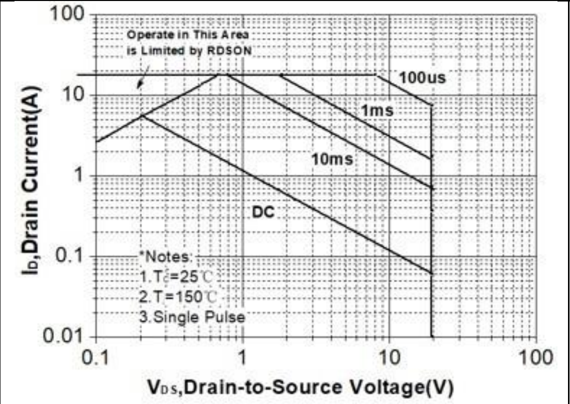


Figure 7 Safe Operating Area

Figure 8 Maximum Drain Current VS. Case Temperature



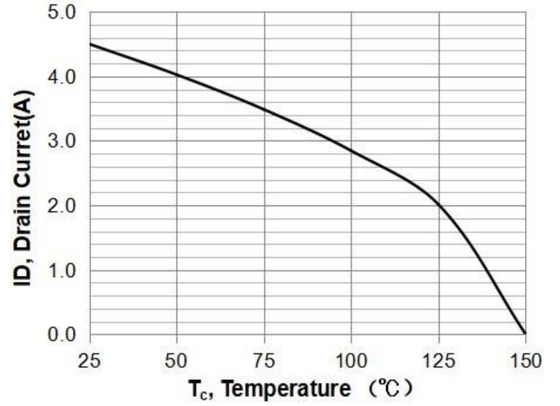
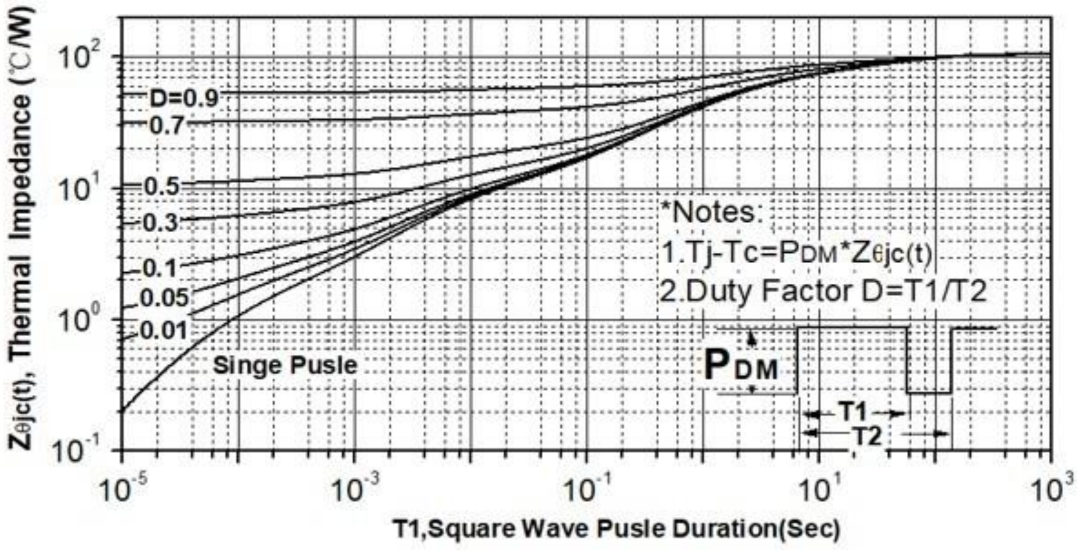
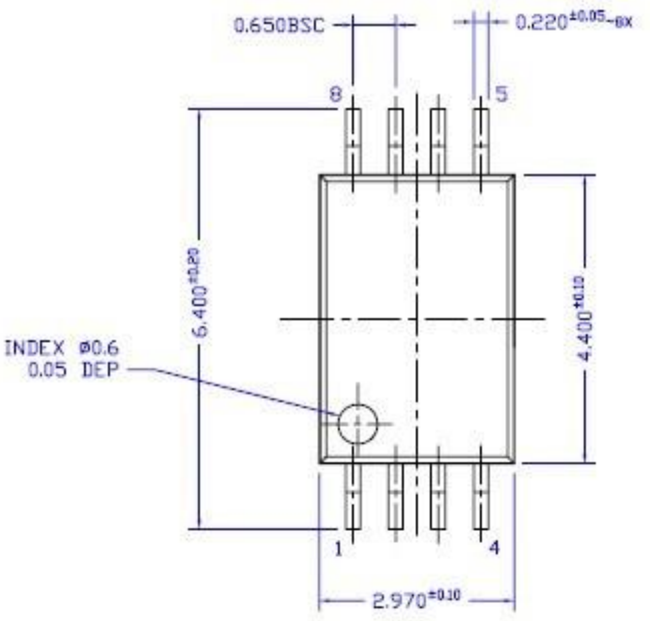
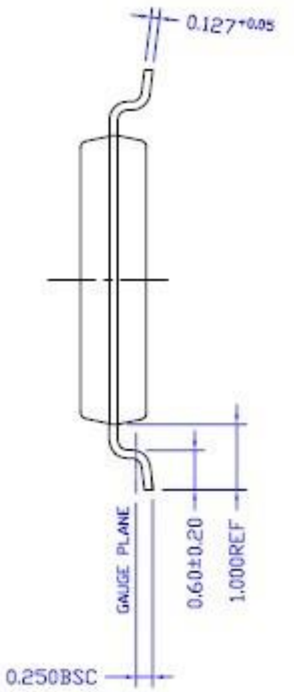


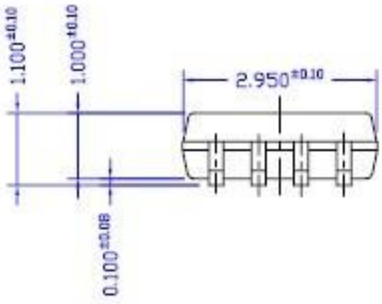
Figure 9 Maximum Transient Thermal Impedance



Package Dimensions:







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