

μPA2826T1S

N-channel MOSFET

20 V , 27 A , 4.3 mΩ

R07DS0989EJ0100

Rev.1.00

Dec 25, 2012

Description

The μPA2826T1S is N-channel MOS Field Effect Transistor designed for power management applications of portable equipment .

Features

- $V_{DS} = 20\text{ V}$ ($T_A = 25^\circ\text{C}$)
- Low on-state resistance
— $R_{DS(on)} = 4.3\text{ m}\Omega$ MAX. ($V_{GS} = 8.0\text{ V}$, $I_D = 13.5\text{ A}$)
- 2.5 V Gate-drive available
- Small & thin type surface mount package with heat spreader
- Pb-free and Halogen free



HWSON-8

Ordering Information

Part No.	LEAD PLATING	PACKING	Package
μPA2826T1S-E2-AT ^{*1}	Pure Sn(Tin)	Tape 5000 p/reel	HWSON-8 0.022 g TYP.

Note: ^{*1}. Pb-free (This product does not contain Pb in external electrode and other parts.)

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$)

Item	Symbol	Ratings	Unit
Drain to Source Voltage ($V_{GS} = 0\text{ V}$)	V_{DS}	20	V
Gate to Source Voltage ($V_{DS} = 0\text{ V}$)	V_{GS}	±12	V
Drain Current (DC) ($T_C = 25^\circ\text{C}$)	$I_{D(DC)}$	±27	A
Drain Current (pulse) ^{*1}	$I_{D(pulse)}$	±81	A
Total Power Dissipation ^{*2}	P_{T1}	1.5	W
Total Power Dissipation (PW = 10 sec) ^{*2}	P_{T2}	3.8	W
Total Power Dissipation ($T_C = 25^\circ\text{C}$)	P_{T3}	20	W
Channel Temperature	T_{ch}	150	°C
Storage Temperature	T_{stg}	−55 to +150	°C

Thermal Resistance

Channel to Ambient Thermal Resistance ^{*2}	$R_{th(ch-A)}$	83.3	°C/W
Channel to Case(Drain) Thermal Resistance	$R_{th(ch-C)}$	6.25	°C/W

Notes: ^{*1}. PW ≤ 10 μs, Duty Cycle ≤ 1%

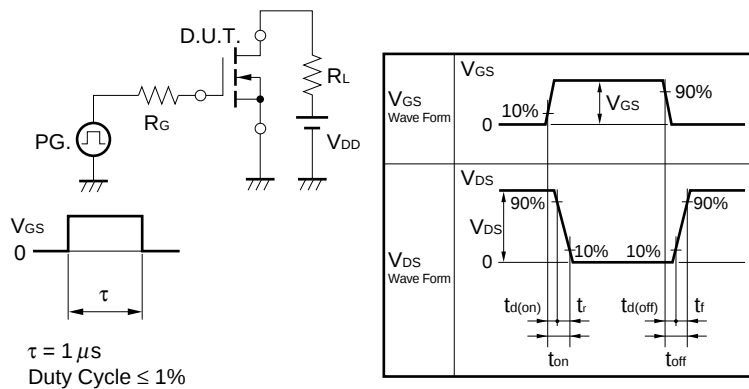
^{*2}. Mounted on a glass epoxy board of 25.4 mm x 25.4 mm x 0.8 mm

Electrical Characteristics (T_A = 25°C)

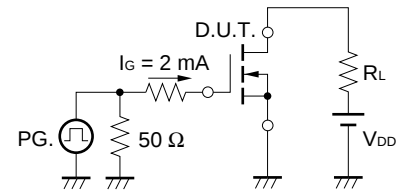
Item	Symbol	MIN.	TYP.	MAX.	Unit	Test Conditions
Zero Gate Voltage Drain Current	I _{DSS}			1	μA	V _{DS} = 20 V, V _{GS} = 0 V
Gate Leakage Current	I _{GSS}			±10	μA	V _{GS} = ±12 V, V _{DS} = 0 V
Gate Cut-off Voltage	V _{GS(off)}	0.5		1.5	V	V _{DS} = 10 V, I _D = 1 mA
Forward Transfer Admittance *1	y _{fs}	25			S	V _{DS} = 10 V, I _D = 6.8 A
Drain to Source On-state Resistance *1	R _{DS(on)1}		3.4	4.3	mΩ	V _{GS} = 8.0 V, I _D = 13.5 A
	R _{DS(on)2}		3.9	4.8	mΩ	V _{GS} = 4.5 V, I _D = 13.5 A
	R _{DS(on)3}		5.4	9.9	mΩ	V _{GS} = 2.5 V, I _D = 6.8 A
Input Capacitance	C _{iss}		3610		pF	V _{DS} = 10 V,
Output Capacitance	C _{oss}		1230		pF	V _{GS} = 0 V,
Reverse Transfer Capacitance	C _{rss}		1130		pF	f = 1 MHz
Turn-on Delay Time	t _{d(on)}		50		ns	V _{DD} = 10 V, I _D = 13.5 A, V _{GS} = 4.0 V, R _G = 10 Ω
Rise Time	t _r		94		ns	
Turn-off Delay Time	t _{d(off)}		120		ns	
Fall Time	t _f		120		ns	V _{DD} = 10 V, V _{GS} = 4.0 V, I _D = 27 A
Total Gate Charge	Q _G		37		nC	
Gate to Source Charge	Q _{GS}		7		nC	
Gate to Drain Charge	Q _{GD}		18		nC	
Body Diode Forward Voltage *1	V _{F(S-D)}		0.82		V	I _F = 27 A, V _{GS} = 0 V
Reverse Recovery Time	t _{rr}		73		ns	I _F = 27 A, V _{GS} = 0 V,
Reverse Recovery Charge	Q _{rr}		70		nC	di/dt = 100 A/μs

Note: *1. Pulsed

TEST CIRCUIT 1 SWITCHING TIME

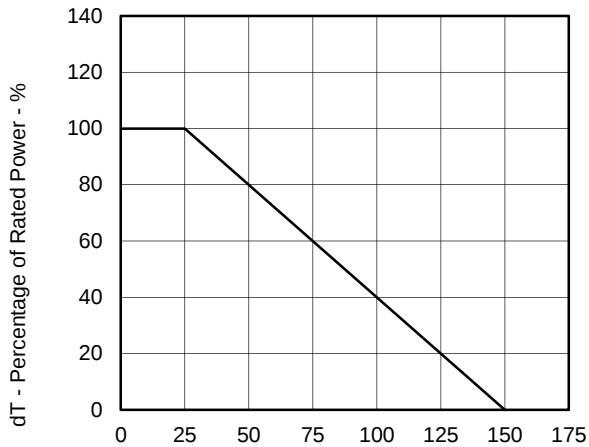


TEST CIRCUIT 2 GATE CHARGE



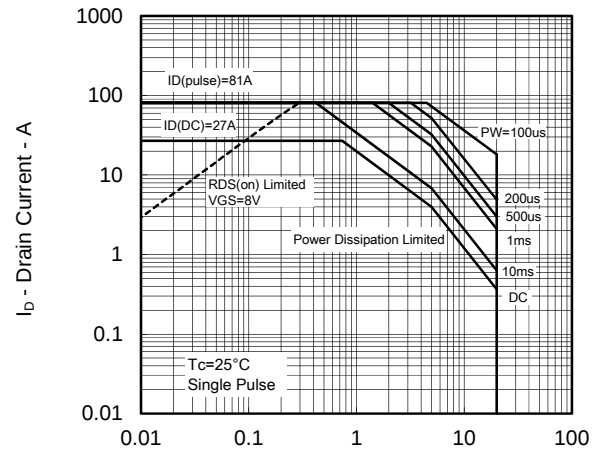
TYPICAL CHARACTERISTICS (T_A = 25°C)

DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



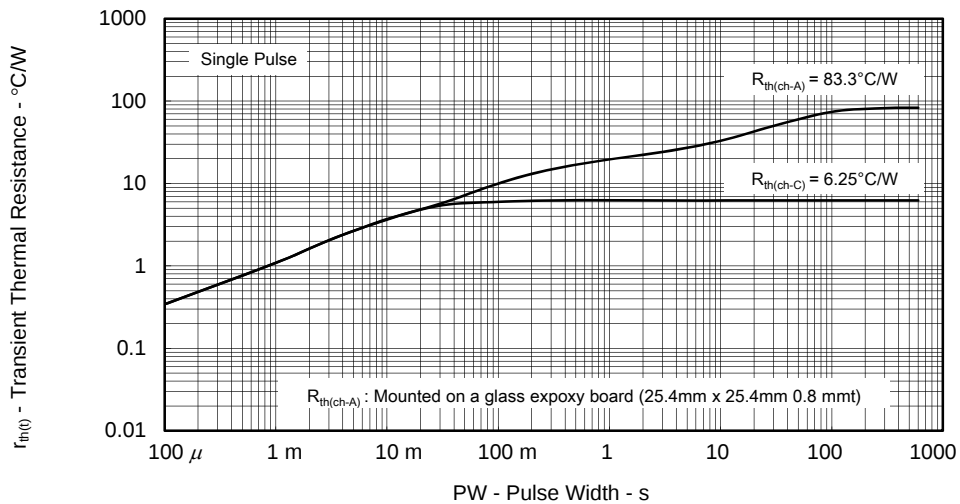
T_C - Case Temperature - °C

FORWARD BIAS SAFE OPERATING AREA



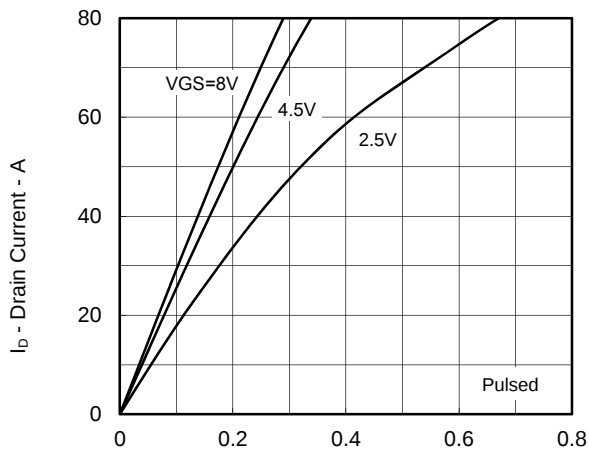
V_{DS} - Drain to Source Voltage - V

TRANSIENT THERMAL RESISTANCE vs. PULSE WIDTH



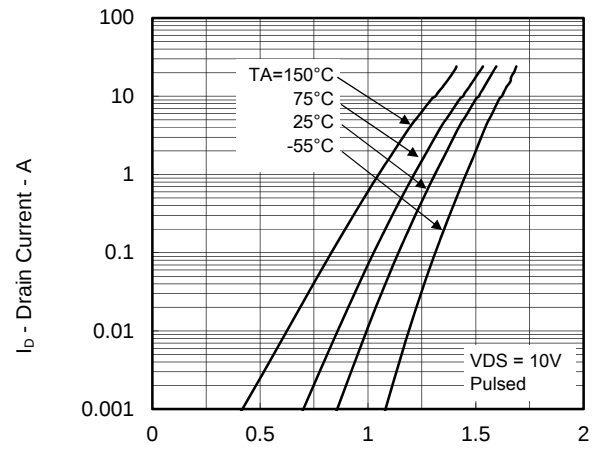
PW - Pulse Width - s

DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



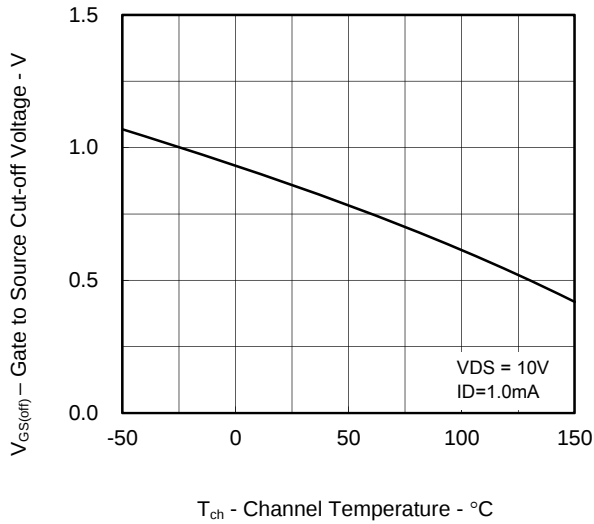
V_{DS} - Drain to Source Voltage - V

FORWARD TRANSFER CHARACTERISTICS

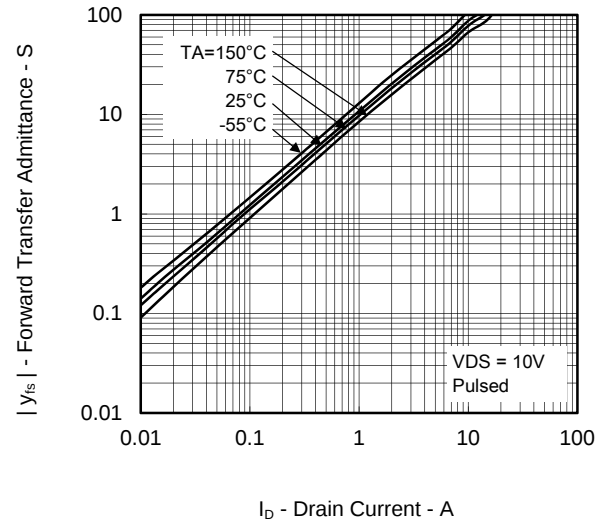


V_{GS} - Gate to Source Voltage - V

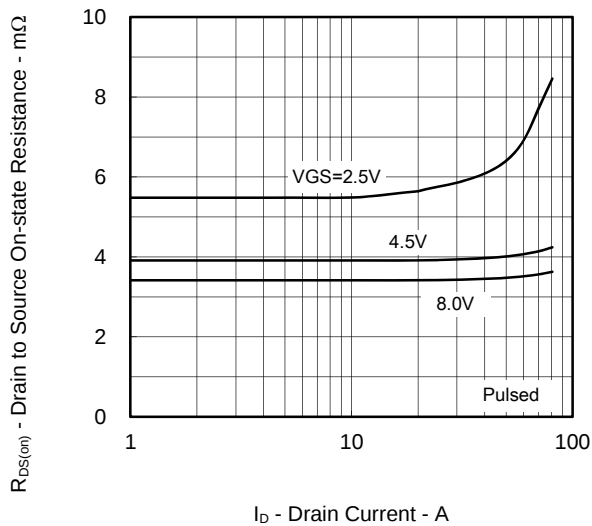
GATE TO SOURCE CUT-OFF VOLTAGE vs.
CHANNEL TEMPERATURE



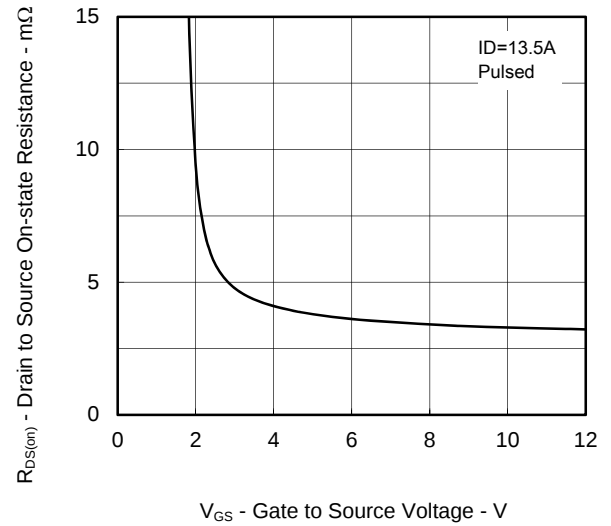
FORWARD TRANSFER ADMITTANCE vs. DRAIN
CURRENT



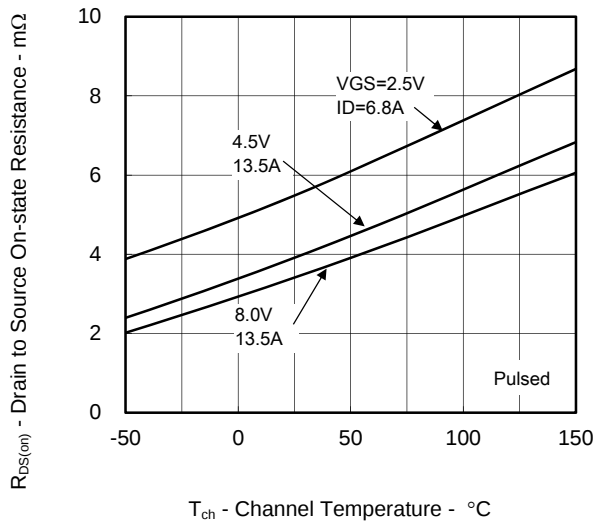
DRAIN TO SOURCE ON-STATE RESISTANCE vs.
DRAIN CURRENT



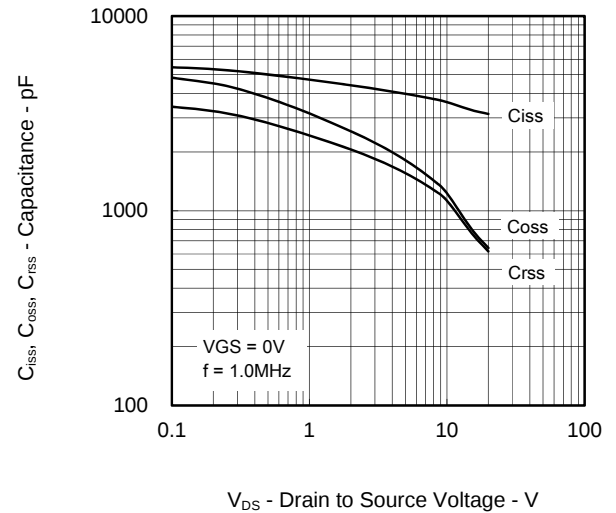
DRAIN TO SOURCE ON-STATE RESISTANCE vs.
GATE TO SOURCE VOLTAGE



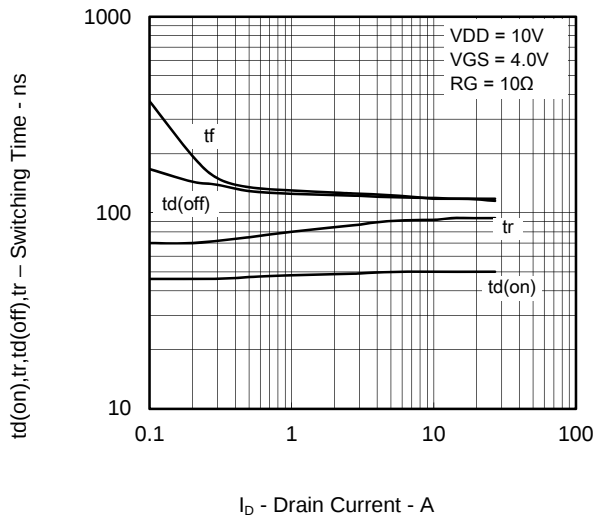
DRAIN TO SOURCE ON-STATE RESISTANCE vs.
CHANNEL TEMPERATURE



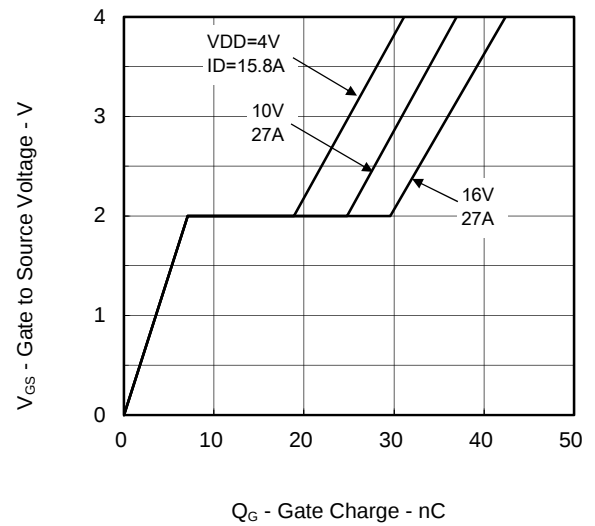
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



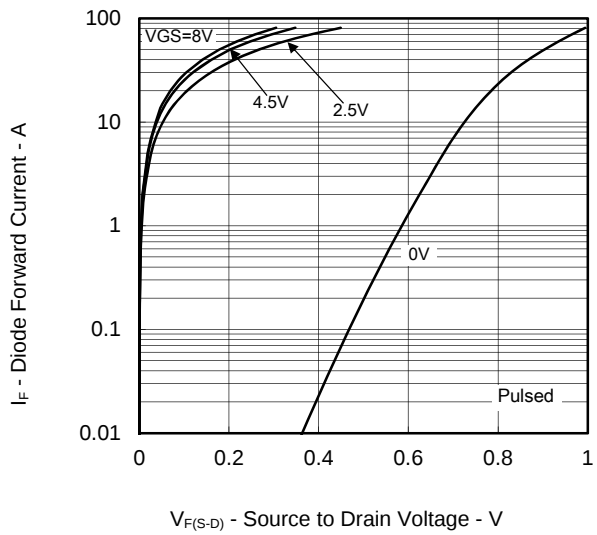
SWITCHING CHARACTERISTICS



DYNAMIC INPUT CHARACTERISTICS

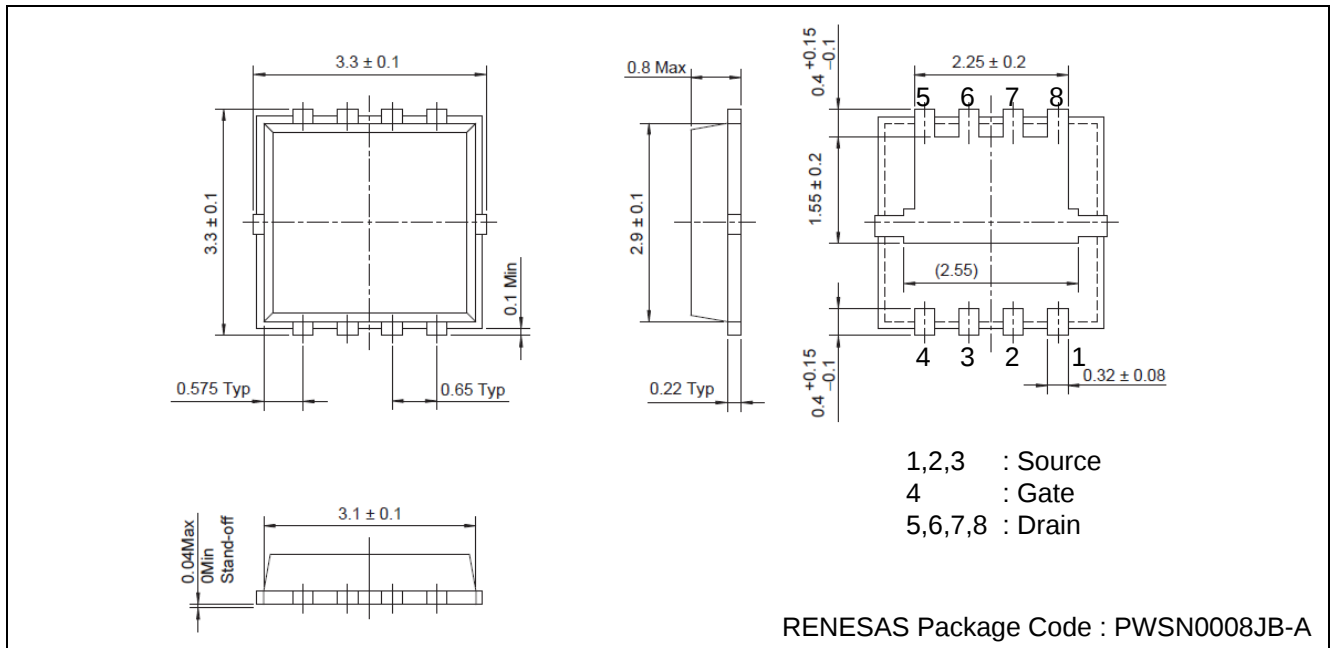


SOURCE TO DRAIN DIODE FORWARD VOLTAGE

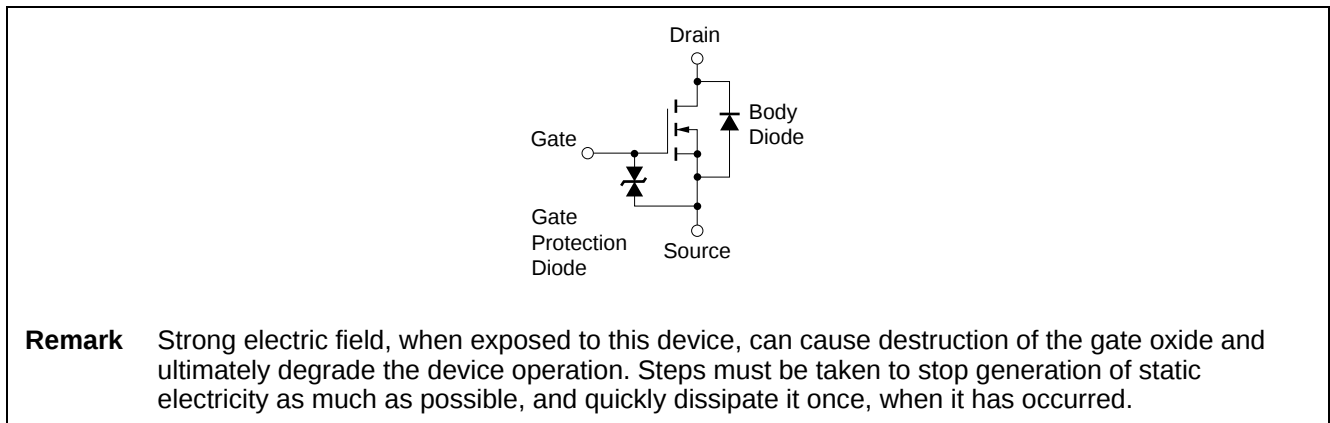


Package Drawings (Unit: mm)

HWSN-8



Equivalent Circuit



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