

μPA2766T1A

N-channel MOSFET

30 V , 130 A , 0.88 mΩ

R07DS0883EJ0102

Rev.1.02

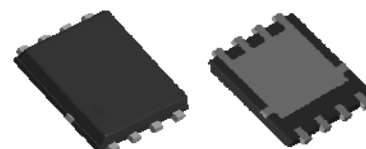
Nov 28, 2012

Description

The μPA2766T1A is N-channel MOS Field Effect Transistor designed for high current switching application.

Features

- $V_{DSS} = 30\text{ V}$ ($T_A = 25^\circ\text{C}$)
- Low on-state resistance
 - $R_{DS(on)} = 0.88\text{ m}\Omega$ MAX. ($V_{GS} = 10\text{ V}$, $I_D = 46\text{ A}$)
 - $R_{DS(on)} = 1.82\text{ m}\Omega$ MAX. ($V_{GS} = 4.5\text{ V}$, $I_D = 39\text{ A}$)
- 4.5 V Gate-drive available
- Thin type surface mount package with heat spreader
- Halogen free



8-pin HVSON(6051)

Ordering Information

Part No.	LEAD PLATING	PACKING	Package
μPA2766T1A-E2-AY ^{*1}	Pure Sn	Tape 3000 p/reel	8-pin HVSON(6051) 0.1 g TYP.

Note: *1. Pb-free (This product does not contain Pb in external electrode.)

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

Item	Symbol	Ratings	Unit
Drain to Source Voltage ($V_{GS} = 0\text{ V}$)	V_{DSS}	30	V
Gate to Source Voltage ($V_{DS} = 0\text{ V}$)	V_{GSS}	±20	V
Drain Current (DC) ($T_C = 25^\circ\text{C}$)	$I_{D(DC)}$	±130	A
Drain Current (pulse) ^{*1}	$I_{D(pulse)}$	±312	A
Total Power Dissipation ^{*2}	P_{T1}	1.5	W
Total Power Dissipation (PW = 10 sec) ^{*2}	P_{T2}	4.6	W
Total Power Dissipation ($T_C = 25^\circ\text{C}$)	P_{T3}	83	W
Channel Temperature	T_{ch}	150	°C
Storage Temperature	T_{stg}	-55 to +150	°C
Single Avalanche Current ^{*3}	I_{AS}	55	A
Single Avalanche Energy ^{*3}	E_{AS}	303	mJ

Thermal Resistance

Channel to Ambient Thermal Resistance ^{*2}	$R_{th(ch-A)}$	83.3	°C/W
Channel to Case(Drain) Thermal Resistance	$R_{th(ch-C)}$	1.5	°C/W

Notes: *1. $PW \leq 10\ \mu\text{s}$, Duty Cycle $\leq 1\%$

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

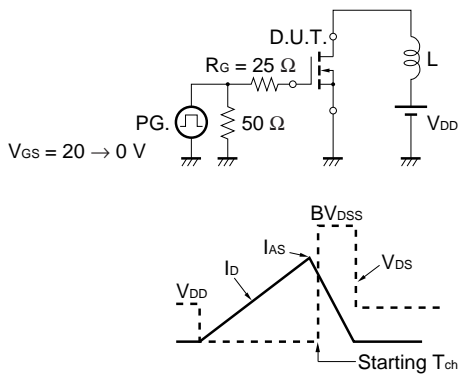
*3. Starting $T_{ch} = 25^\circ\text{C}$, $V_{DD} = 15\text{ V}$, $R_G = 25\ \Omega$, $V_{GS} = 20 \rightarrow 0\text{ V}$, $L = 100\ \mu\text{H}$

Electrical Characteristics (T_A = 25°C)

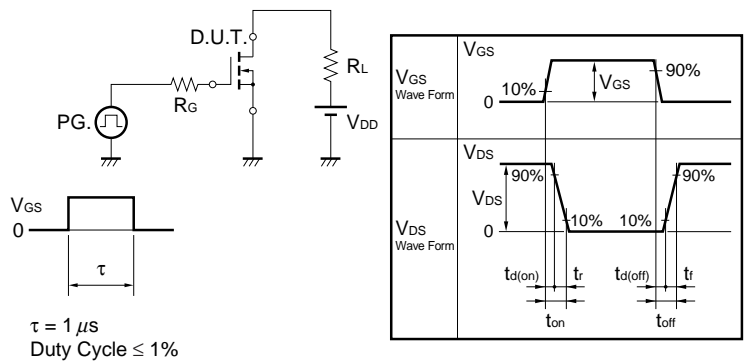
Item	Symbol	MIN.	TYP.	MAX.	Unit	Test Conditions
Zero Gate Voltage Drain Current	I _{DSS}			10	μA	V _{DS} = 30 V, V _{GS} = 0 V
Gate Leakage Current	I _{GSS}			±100	nA	V _{GS} = ±20 V, V _{DS} = 0 V
Gate Cut-off Voltage	V _{GS(off)}	1.0		2.5	V	V _{DS} = 10 V, I _D = 1 mA
Forward Transfer Admittance *1	y _{fs}	35			S	V _{DS} = 10 V, I _D = 39 A
Drain to Source On-state Resistance *1	R _{DS(on)1}		0.72	0.88	mΩ	V _{GS} = 10 V, I _D = 46 A
	R _{DS(on)2}		1.3	1.82	mΩ	V _{GS} = 4.5 V, I _D = 39 A
Input Capacitance	C _{iss}		10850		pF	V _{DS} = 10 V,
Output Capacitance	C _{oss}		4010		pF	V _{GS} = 0 V,
Reverse Transfer Capacitance	C _{rss}		3340		pF	f = 1 MHz
Turn-on Delay Time	t _{d(on)}		50		ns	V _{DD} = 15 V, I _D = 39 A,
Rise Time	t _r		160		ns	V _{GS} = 10 V,
Turn-off Delay Time	t _{d(off)}		380		ns	R _G = 10 Ω
Fall Time	t _f		365		ns	
Total Gate Charge	Q _G		257		nC	V _{DD} = 15 V,
Gate to Source Charge	Q _{GS}		33		nC	V _{GS} = 10 V,
Gate to Drain Charge	Q _{GD}		103		nC	I _D = 78 A
Body Diode Forward Voltage *1	V _{F(S-D)}		0.80	1.5	V	I _F = 46A, V _{GS} = 0 V
Reverse Recovery Time	t _{rr}		215		ns	I _F = 50 A, V _{GS} = 0 V,
Reverse Recovery Charge	Q _{rr}		415		nC	di/dt = 100 A/μs

Note: *1. Pulsed

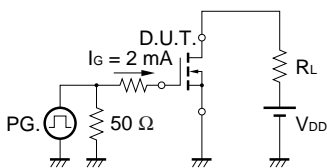
TEST CIRCUIT 1 AVALANCHE CAPABILITY



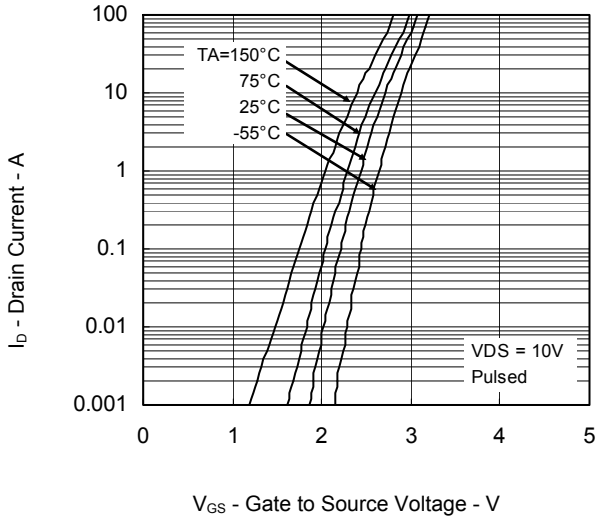
TEST CIRCUIT 2 SWITCHING TIME



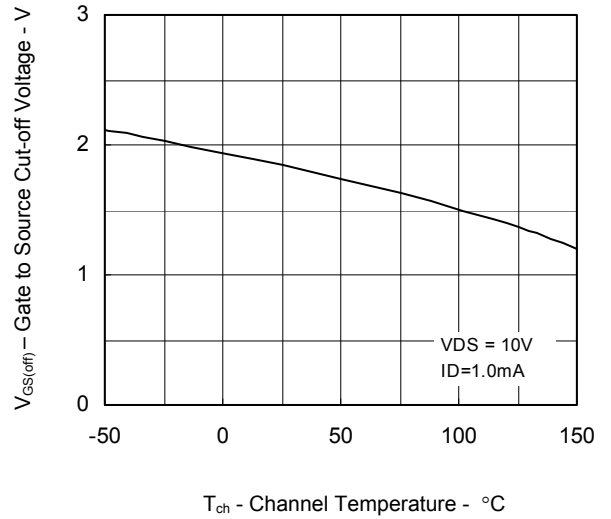
TEST CIRCUIT 3 GATE CHARGE



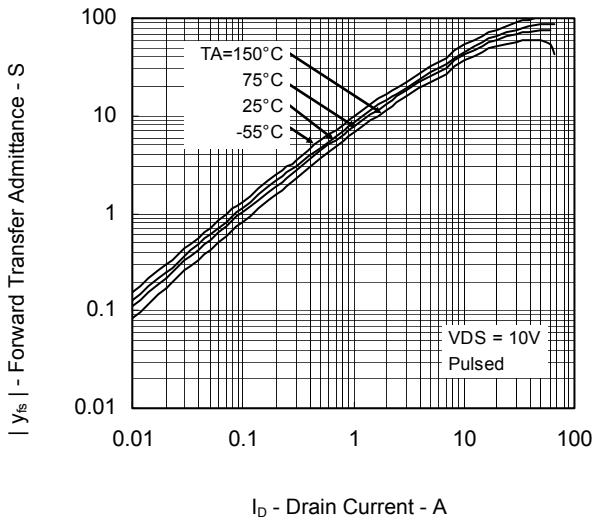
FORWARD TRANSFER CHARACTERISTICS



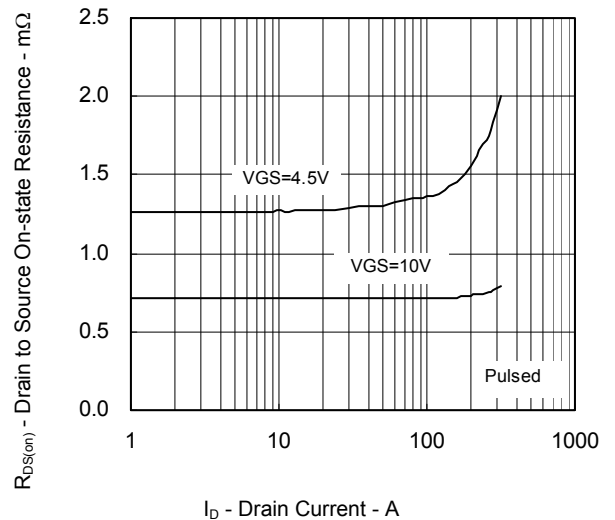
GATE TO SOURCE CUT-OFF VOLTAGE vs. CHANNEL TEMPERATURE



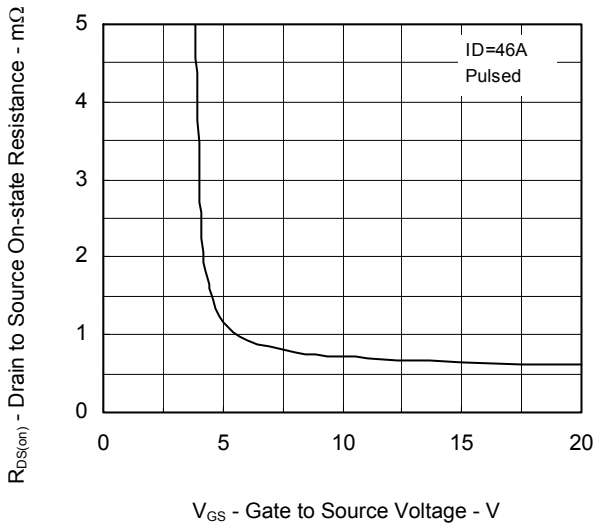
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



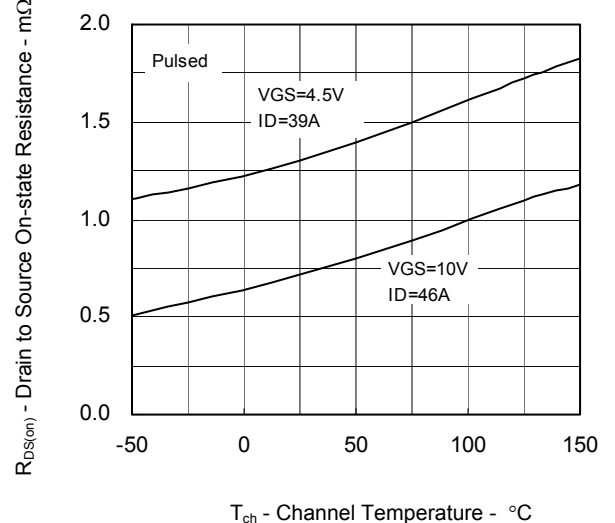
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



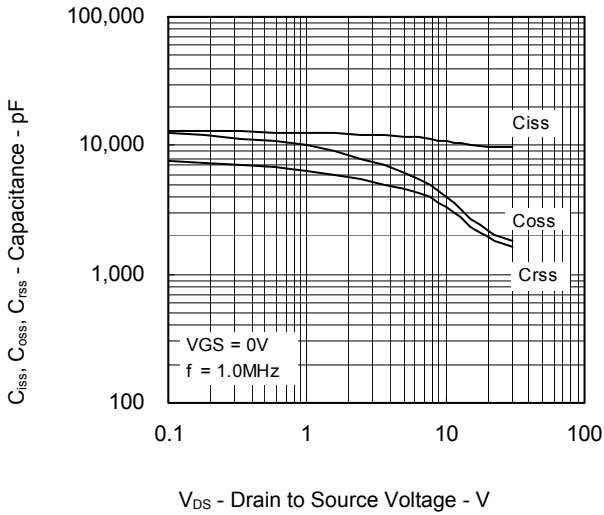
DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



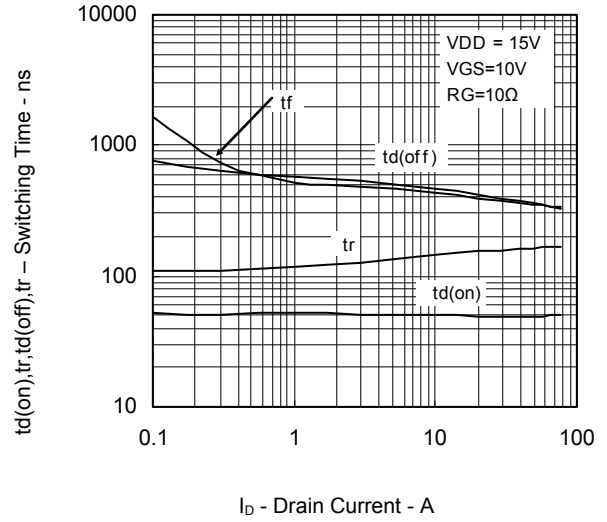
DRAIN TO SOURCE ON-STATE RESISTANCE vs. CHANNEL TEMPERATURE



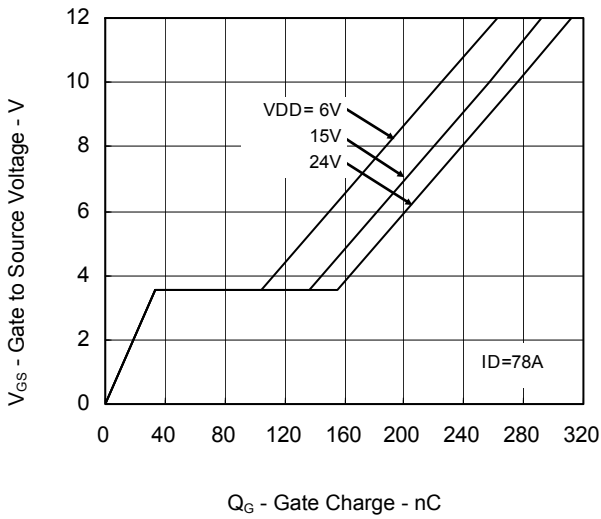
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



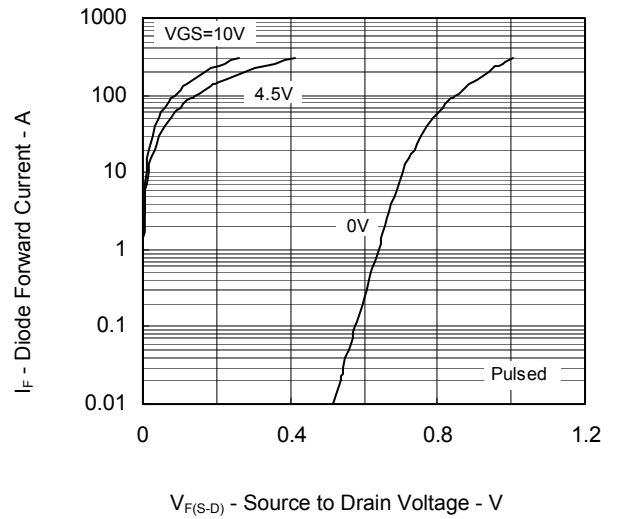
SWITCHING CHARACTERISTICS



DYNAMIC INPUT CHARACTERISTICS

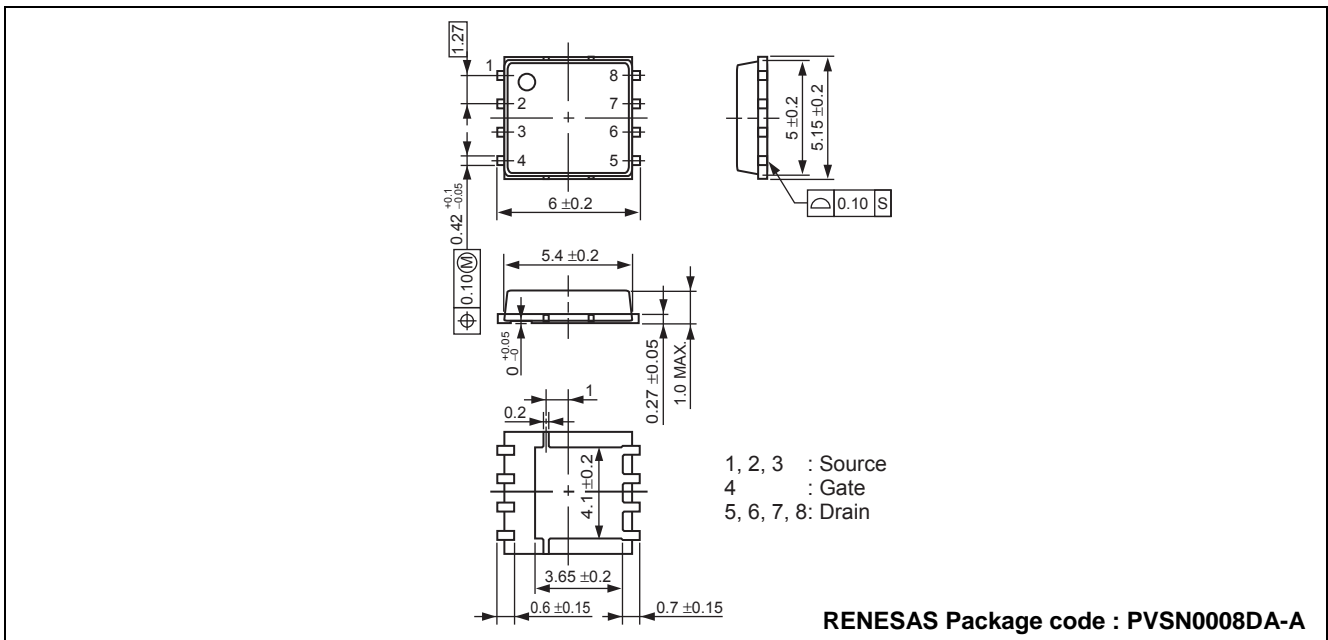


SOURCE TO DRAIN DIODE FORWARD VOLTAGE

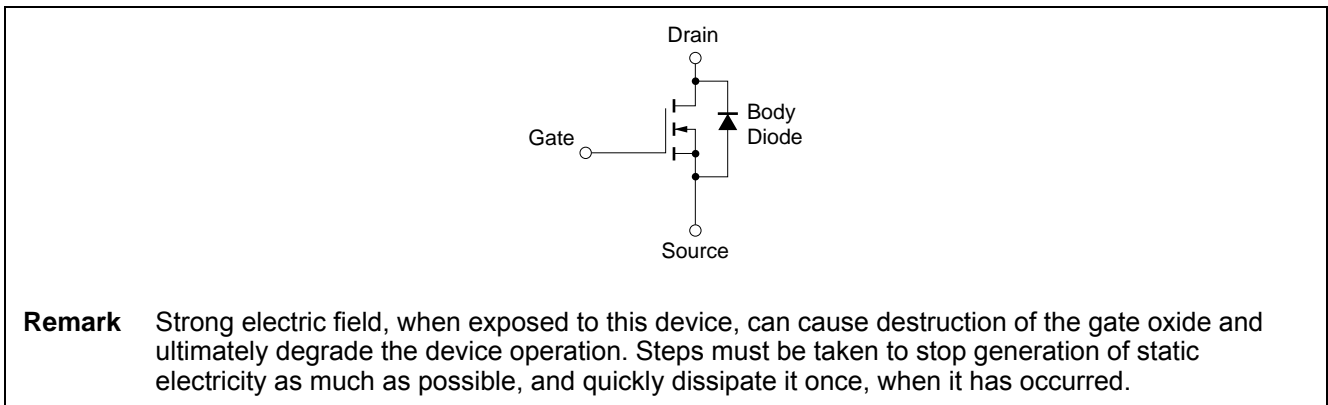


Package Drawings (Unit: mm)

8pin-HVSON(6051)



Equivalent Circuit



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