

μPA503CT

P-CHANNEL MOSFET FOR SWITCHING

R07DS1279EJ0200

Rev.2.00

Jul 08, 2015

Description

The μPA503CT, P-channel vertical type MOSFET designed for general-purpose switch, is a device which can be driven directly by a 4.5 V power source.

Features

- Two MOSFET circuits (Two source common)
- Directly driven by a 4.5 V power source.
- Low on-state resistance
 $R_{DS(on)1} = 2.7 \Omega \text{ MAX. (} V_{GS} = -10 \text{ V, } I_D = -100 \text{ mA)}$
 $R_{DS(on)2} = 3.2 \Omega \text{ MAX. (} V_{GS} = -4.5 \text{ V, } I_D = -50 \text{ mA)}$

Ordering Information

Part Number	Lead Plating	Packing	Package
μPA503CT-T1-A/AT	-A:Sn-Bi, -AT:Pure Sn	3000p/Reel	SC-74A (5pMM)

Remark "-A/AT" indicates Pb-free. This product does not contain Pb in external electrode and other parts.

Marking UF

Absolute Maximum Ratings (T_A = 25°C)

Drain to Source Voltage (V _{GS} = 0 V)	V _{DSS}	-60	V
Gate to Source Voltage (V _{DS} = 0 V)	V _{GSS}	±20	V
Drain Current (DC)	I _{D(DC)}	±100	mA
Drain Current (pulse) ^{Note}	I _{D(pulse)}	±200	mA
Total Power Dissipation	P _T	300 (Total)	mW
Channel Temperature	T _{ch}	150	°C
Storage Temperature	T _{stg}	-55 to +150	°C

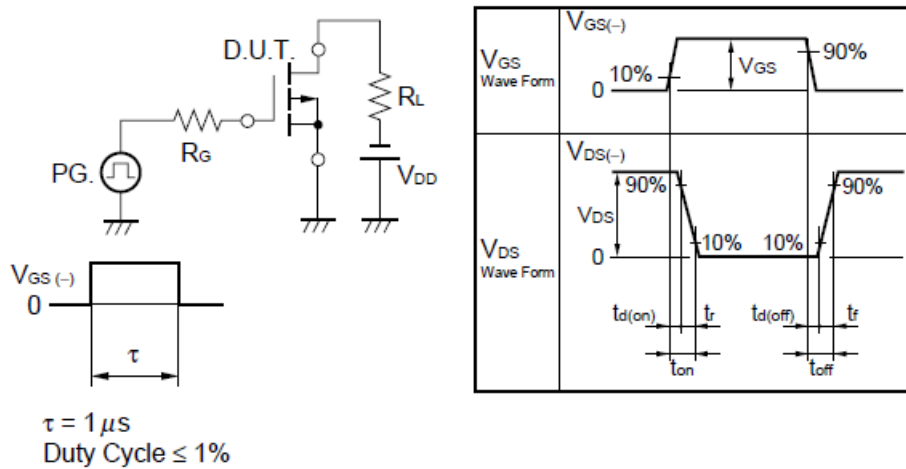
Note PW ≤ 10 μs, Duty Cycle ≤ 1%

Electrical Characteristics (T_A = 25°C)

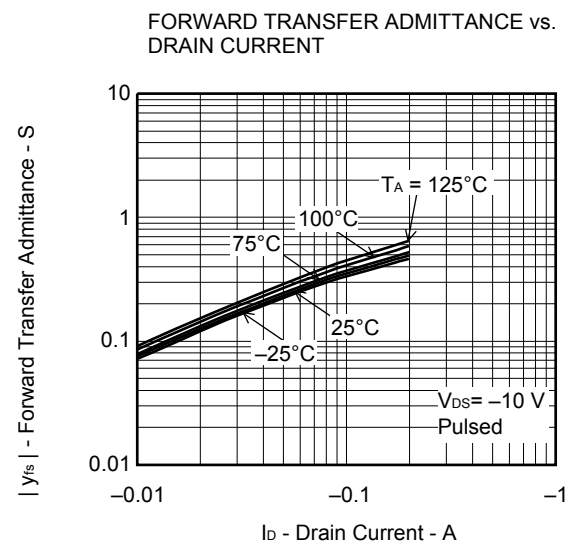
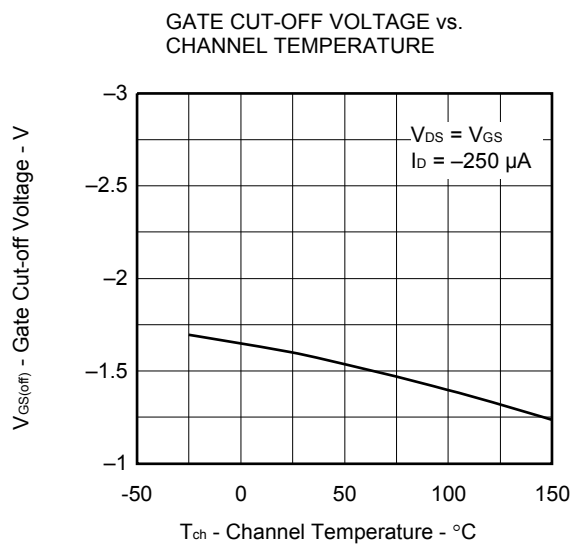
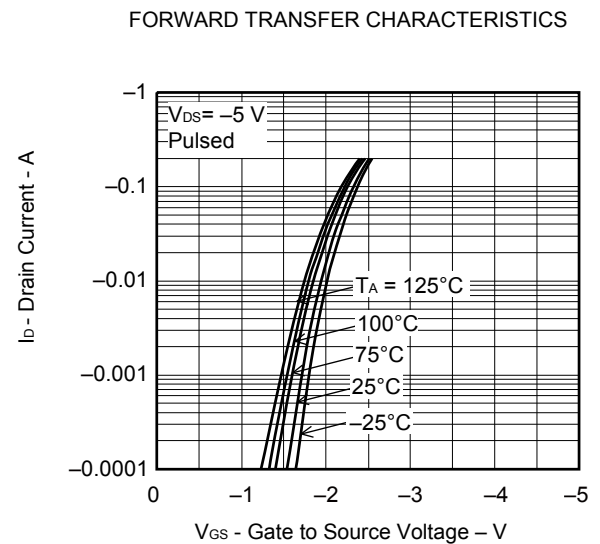
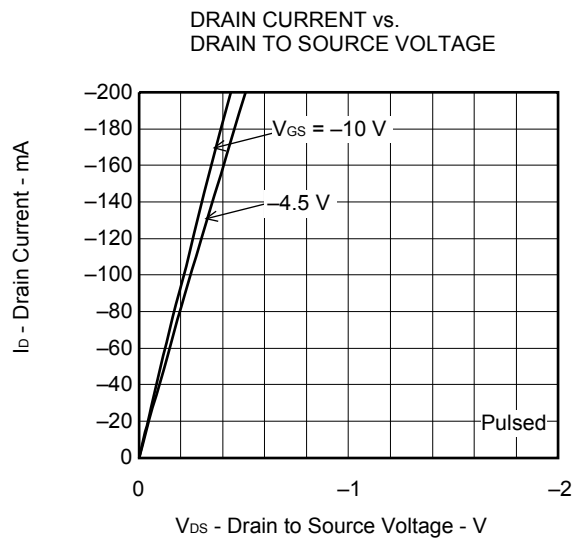
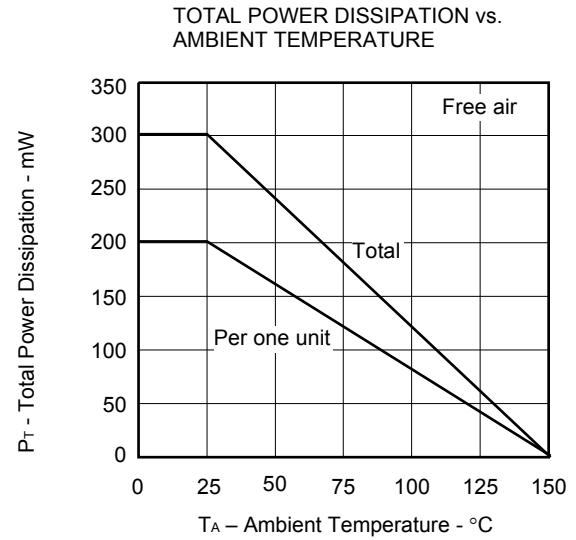
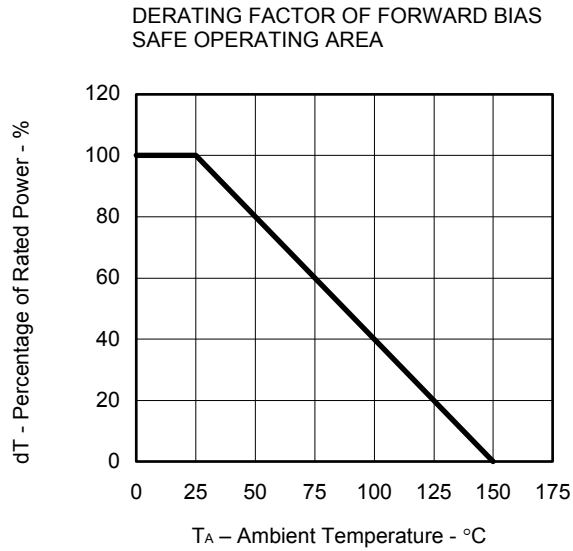
Characteristics	Symbol	Test Conditions	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -60 V, V _{GS} = 0 V			-1	μA
Gate Leakage Current	I _{GSS}	V _{GS} = ±20 V, V _{DS} = 0 V			±10	μA
Gate to Source Cut-off Voltage	V _{GS(off)}	V _{DS} = V _{GS} , I _D = -250 μA	-1.0		-2.5	V
Forward Transfer Admittance Note	y _{fs}	V _{DS} = -10 V, I _D = -100 mA	150			mS
Drain to Source On-state Resistance Note	R _{DS(on)1}	V _{GS} = -10 V, I _D = -100 mA		1.8	2.7	Ω
	R _{DS(on)2}	V _{GS} = -4.5 V, I _D = -50 mA		2.0	3.2	Ω
Input Capacitance	C _{iss}	V _{DS} = -10 V,		9		pF
Output Capacitance	C _{oss}	V _{GS} = 0 V,		7		pF
Reverse Transfer Capacitance	C _{rss}	f = 1.0 MHz		2		pF
Turn-on Delay Time	t _{d(on)}	V _{DD} = -10 V,		75		ns
Rise Time	t _r	I _D = -200 mA,		110		ns
Turn-off Delay Time	t _{d(off)}	V _{GS} = -10 V,		900		ns
Fall Time	t _f	R _G = 10 Ω		400		ns
Total Gate Charge	Q _G	I _D = -200 mA, V _{DD} = -25 V, V _{GS} = -10 V		2.2		nC
Body Diode Forward Voltage Note	V _{F(S-D)}	I _F = -200 mA, V _{GS} = 0 V		0.86		V

Note Pulsed

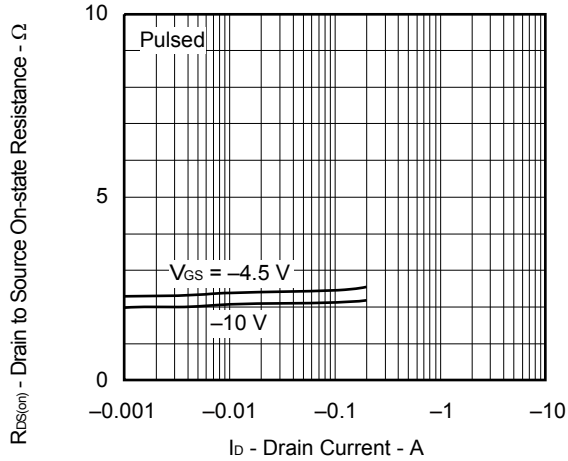
Test Circuit Switching Time



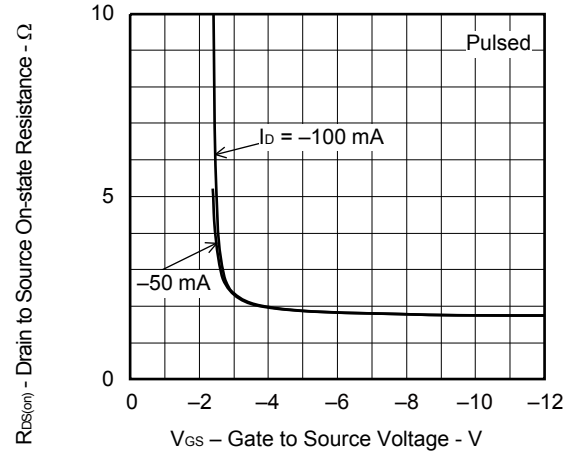
Typical Characteristics (T_A = 25°C)



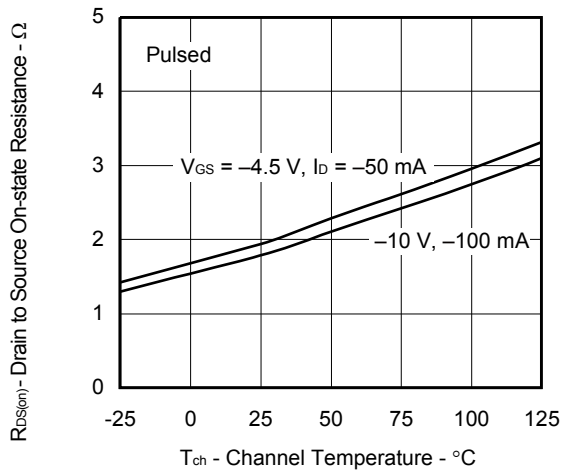
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



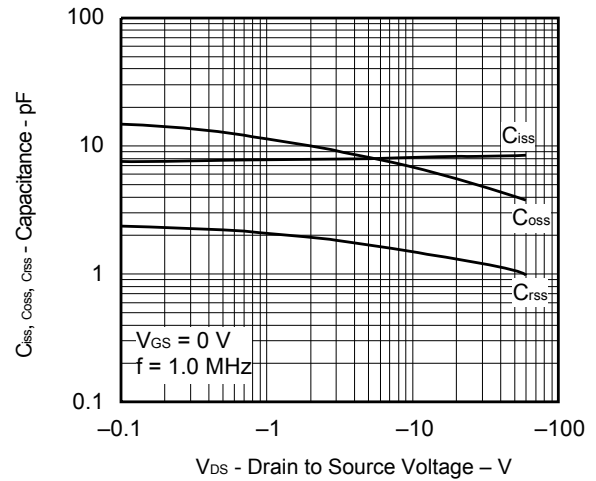
DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



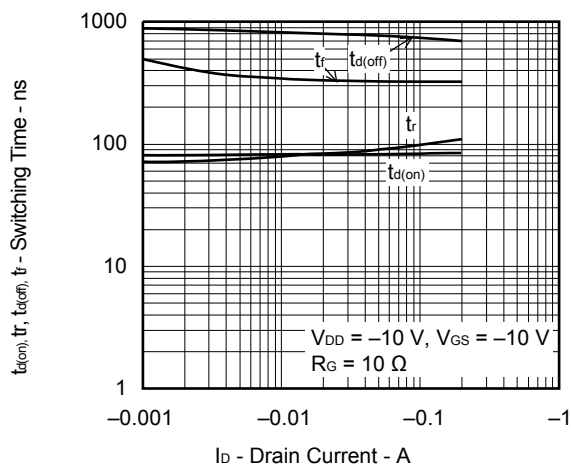
DRAIN TO SOURCE ON-STATE RESISTANCE vs. CHANNEL TEMPERATURE



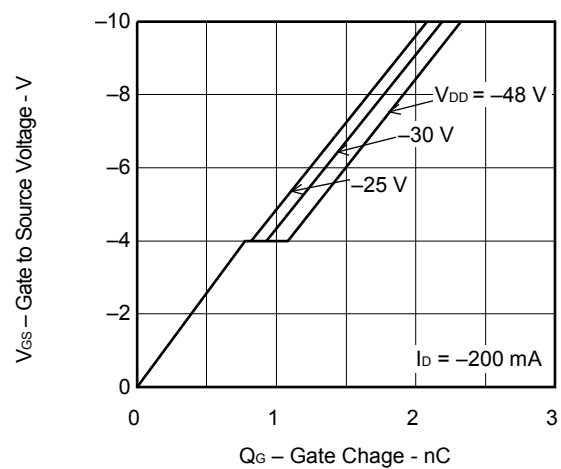
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE

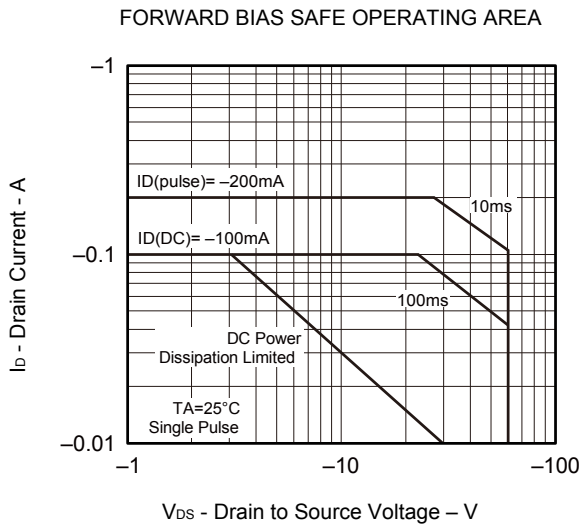
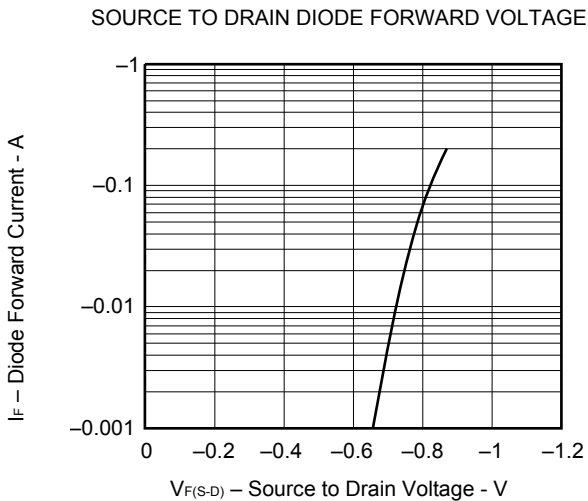


SWITCHING CHARACTERISTICS



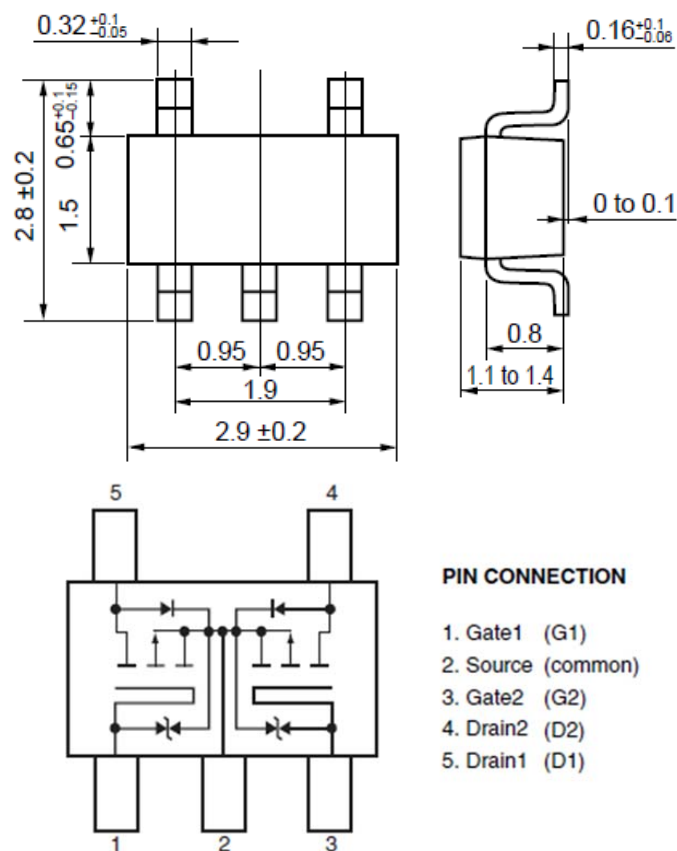
DYNAMIC INPUT CHARACTERISTICS



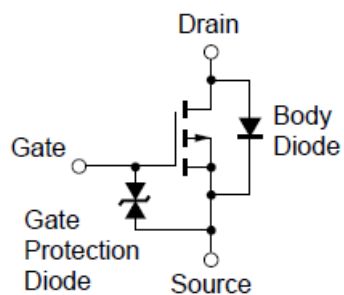


Package Drawings (Unit: mm)

SC-74A (5pMM)



Equivalent Circuit



Remark The diode connected between the gate and source of the transistor serves as a protector against ESD. When this device actually used, an additional protection circuit is externally required if a voltage exceeding the rated voltage may be applied to this device.

	μPA503CT
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Rev.	Date	Description	
		Page	Summary
1.00	Sep , 2013	–	First Edition Issued
2.00	Jun, 2015	3, 4, 5	Changed all graphs
		3	Added FORWARD BIAS SAFE OPERATING AREA

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