

MOS FIELD EFFECT TRANSISTOR
 μ PA610TA

P-CHANNEL MOS FIELD EFFECT TRANSISTOR
FOR HIGH SPEED SWITCHING

DESCRIPTION

The μ PA610TA is a switching device which can be driven directly by a 2.5 V power source.

The μ PA610TA has excellent switching characteristics, and is suitable for use as a high-speed switching device in digital circuits.

FEATURES

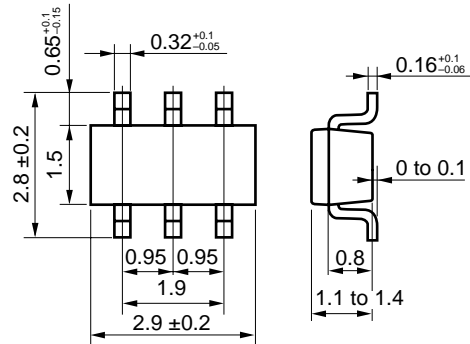
- Can be driven by a 2.5 V power source.
- Low Gate Cut-off Voltage.

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C)

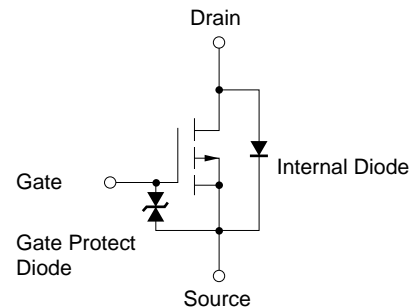
Drain to Source Voltage	V _{DSS}	-30	V
Gate to Source Voltage	V _{GSS}	±20	V
Drain Current (DC)	I _{D(DC)}	±0.1	A
Drain Current (pulse)	I _{D(pulse)}	±0.4 Note	A
Total Power Dissipation	P _T	300 (TOTAL)	mW
Channel Temperature	T _{ch}	150	°C
Storage Temperature	T _{stg}	-55 to +150	°C

Note PW ≤ 10 μs, Duty Cycle ≤ 1 %

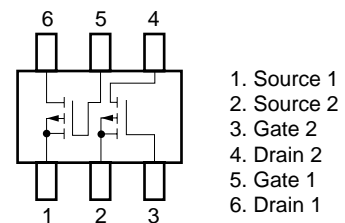
Package Drawings (unit: mm)



Equivalent Circuit



Pin Connection (Top View)



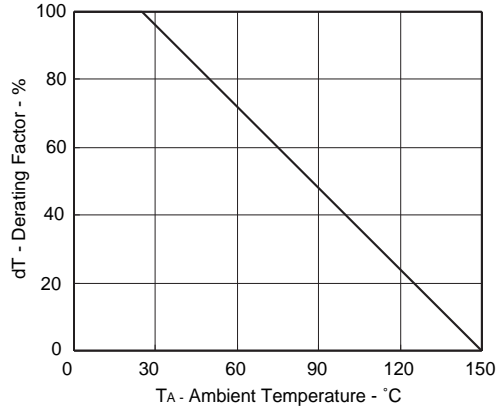
Marking : JB

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

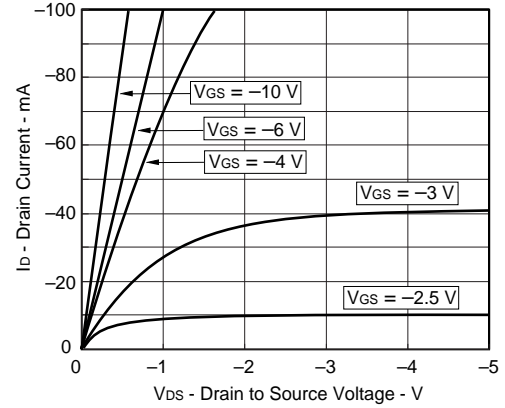
ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain Cut-off Current	I _{DSS}			-1	μA	V _{DS} = -30 V, V _{GS} = 0
Gate Leakage Current	I _{GSS}			±10	μA	V _{GS} = ±20 V, V _{DS} = 0
Gate Cut-off Voltage	V _{GS(off)}	-1.0	-1.4	-1.7	V	V _{DS} = -3 V, I _D = -10 μA
Forward Transfer Admittance	y _{fs}	20			mS	V _{DS} = -3 V, I _D = -10 mA
Drain to Source On-State Resistance	R _{DS(on)1}		23	60	Ω	V _{GS} = -2.5 V, I _D = -1 mA
Drain to Source On-State Resistance	R _{DS(on)2}		11	23	Ω	V _{GS} = -4 V, I _D = -10 mA
Drain to Source On-State Resistance	R _{DS(on)3}		6	13	Ω	V _{GS} = -10 V, I _D = -10 mA
Input Capacitance	C _{iss}		5		pF	V _{DS} = -3 V
Output Capacitance	C _{oss}		15		pF	V _{GS} = 0
Reverse Transfer Capacitance	C _{rss}		1.3		pF	f = 1 MHz
Turn-on Delay Time	t _{d(on)}		140		ns	V _{DD} = -3 V, I _D = -10 mA
Rise Time	t _r		330		ns	V _{GS(on)} = -4 V, R _G = 10 Ω
Turn-off Delay Time	t _{d(off)}		220		ns	R _L = 300 Ω
Fall Time	t _f		320		ns	

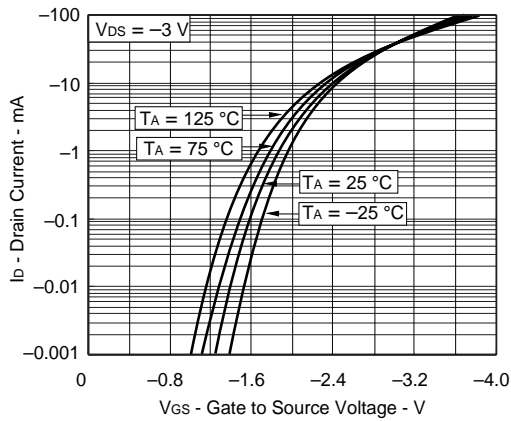
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



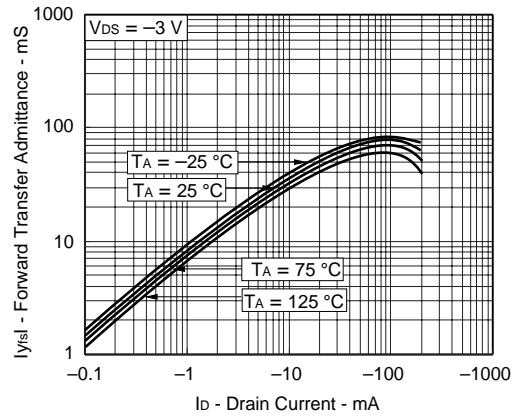
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



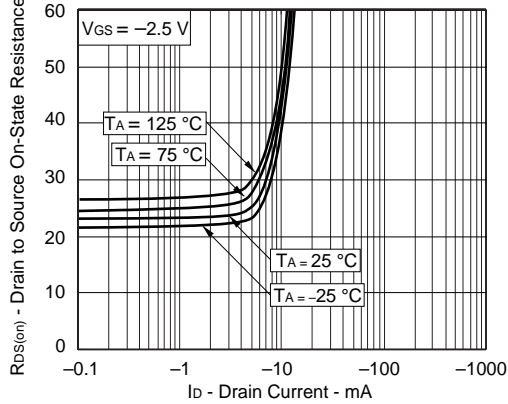
TRANSFER CHARACTERISTICS



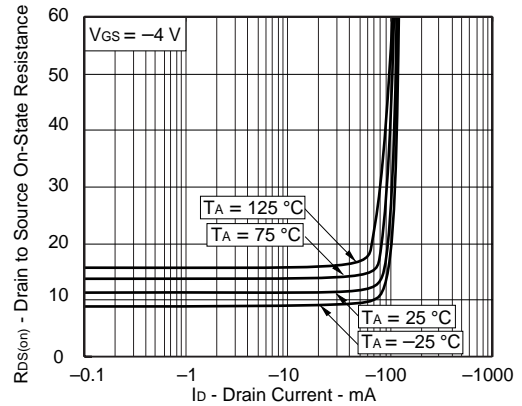
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT

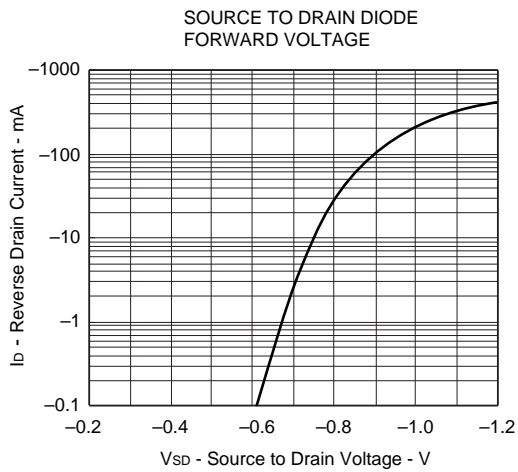
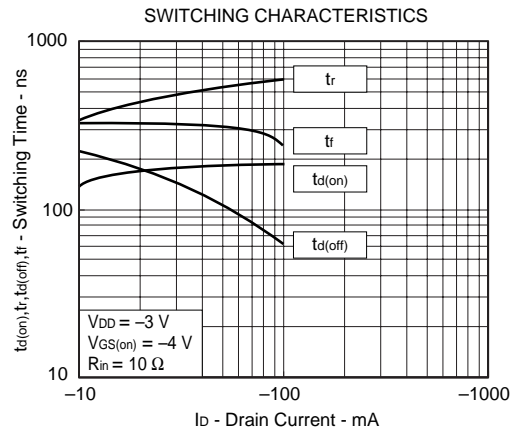
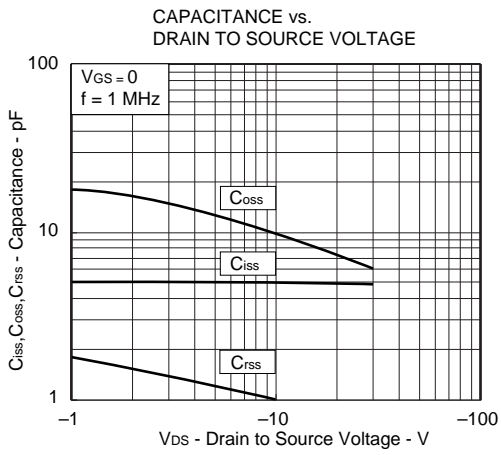
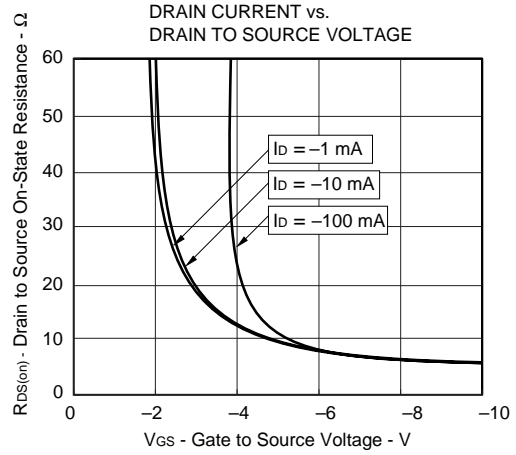
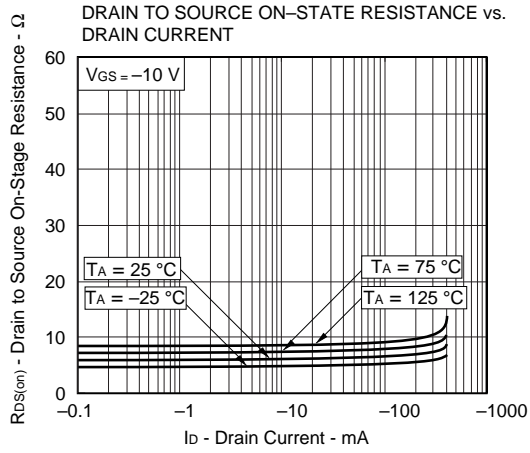


DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT





REFERENCE

Document Name	Document No.
NEC semiconductor device reliability/quality control system	TEI-1202
Quality grade on NEC semiconductor devices	C11531E
Semiconductor device mounting technology manual	C10535E
Guide to quality assurance for semiconductor devices	MEI-1202
Semiconductor selection guide	X10679E

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Anti-radioactive design is not implemented in this product.