

MOS FIELD EFFECT TRANSISTOR

μ PA621TT

N-CHANNEL MOS FIELD EFFECT TRANSISTOR

FOR SWITCHING

DESCRIPTION

The μ PA621TT is a switching device, which can be driven directly by a 2.5 V power source.

This device features a low on-state resistance and excellent switching characteristics, and is suitable for applications such as power switch of portable machine and so on.

FEATURES

- 2.5 V drive available
- Low on-state resistance
 $R_{DS(on)1} = 50 \text{ m}\Omega \text{ MAX. (} V_{GS} = 4.5 \text{ V, } I_D = 2.5 \text{ A)}$
 $R_{DS(on)2} = 53 \text{ m}\Omega \text{ MAX. (} V_{GS} = 4.0 \text{ V, } I_D = 2.5 \text{ A)}$
 $R_{DS(on)3} = 79 \text{ m}\Omega \text{ MAX. (} V_{GS} = 2.5 \text{ V, } I_D = 2.5 \text{ A)}$

ORDERING INFORMATION

PART NUMBER	PACKAGE
μ PA621TT	6pinWSOF (1620)

Marking: WB

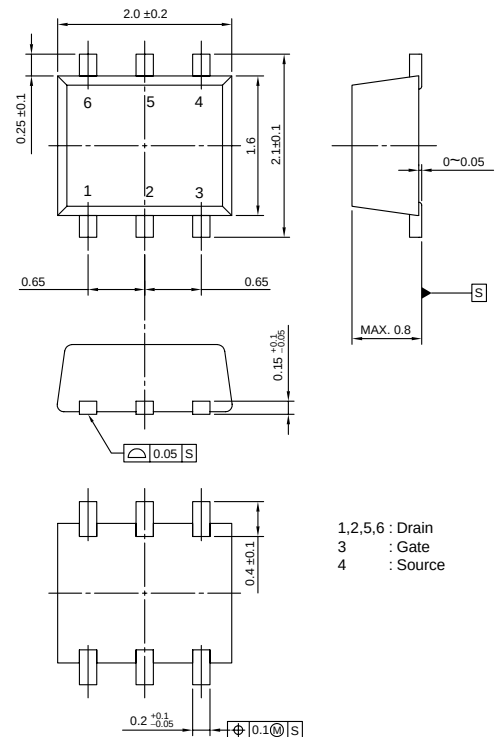
ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

Drain to Source Voltage ($V_{GS} = 0 \text{ V}$)	V_{DSS}	20	V
Gate to Source Voltage ($V_{DS} = 0 \text{ V}$)	V_{GSS}	± 12	V
Drain Current (DC) ($T_A = 25^\circ\text{C}$)	$I_{D(DC)}$	± 5.0	A
Drain Current (pulse) ^{Note1}	$I_{D(pulse)}$	± 20	A
Total Power Dissipation	P_{T1}	0.2	W
Total Power Dissipation ^{Note2}	P_{T2}	1.4	W
Channel Temperature	T_{ch}	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

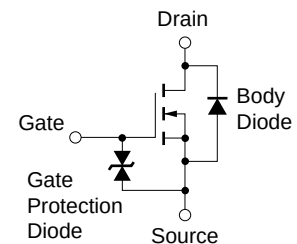
- Notes** 1. $PW \leq 10 \mu\text{s}$, Duty Cycle $\leq 1\%$
 2. Mounted on FR-4 board, $t \leq 5 \text{ sec}$.

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.

PACKAGE DRAWING (Unit: mm)



EQUIVALENT CIRCUIT

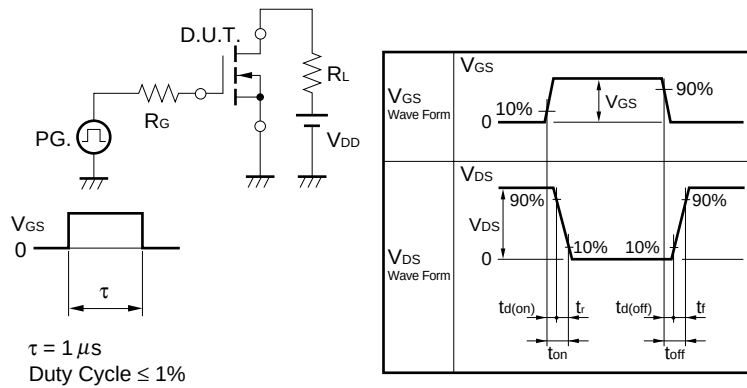


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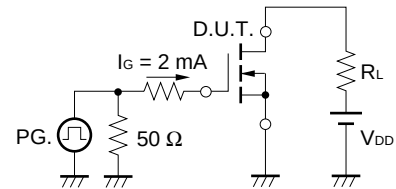
ELECTRICAL CHARACTERISTICS (T_A = 25°C)

CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 20 V, V _{GS} = 0 V			10	μA
Gate Leakage Current	I _{GSS}	V _{GS} = ±12 V, V _{DS} = 0 V			±10	μA
Gate Cut-off Voltage	V _{GS(off)}	V _{DS} = 10 V, I _D = 1.0 mA	0.5	1.0	1.5	V
Forward Transfer Admittance	y _{fs}	V _{DS} = 10 V, I _D = 2.5 A	1.0	4.8		S
Drain to Source On-state Resistance	R _{DS(on)1}	V _{GS} = 4.5 V, I _D = 2.5 A		40	50	mΩ
	R _{DS(on)2}	V _{GS} = 4.0 V, I _D = 2.5 A		42	53	mΩ
	R _{DS(on)3}	V _{GS} = 2.5 V, I _D = 2.5 A		59	79	mΩ
Input Capacitance	C _{iss}	V _{DS} = 10 V		270		pF
Output Capacitance	C _{oss}	V _{GS} = 0 V		80		pF
Reverse Transfer Capacitance	C _{rss}	f = 1.0 MHz		60		pF
Turn-on Delay Time	t _{d(on)}	V _{DD} = 10 V, I _D = 2.5 A		30		ns
Rise Time	t _r	V _{GS} = 4.0 V		200		ns
Turn-off Delay Time	t _{d(off)}	R _G = 10 Ω		120		ns
Fall Time	t _f			160		ns
Total Gate Charge	Q _G	V _{DD} = 16 V		3.3		nC
Gate to Source Charge	Q _{GS}	V _{GS} = 4.0 V		0.7		nC
Gate to Drain Charge	Q _{GD}	I _D = 5.0 A		1.8		nC
Body Diode Forward Voltage	V _{F(S-D)}	I _F = 5.0 A, V _{GS} = 0 V		0.90		V

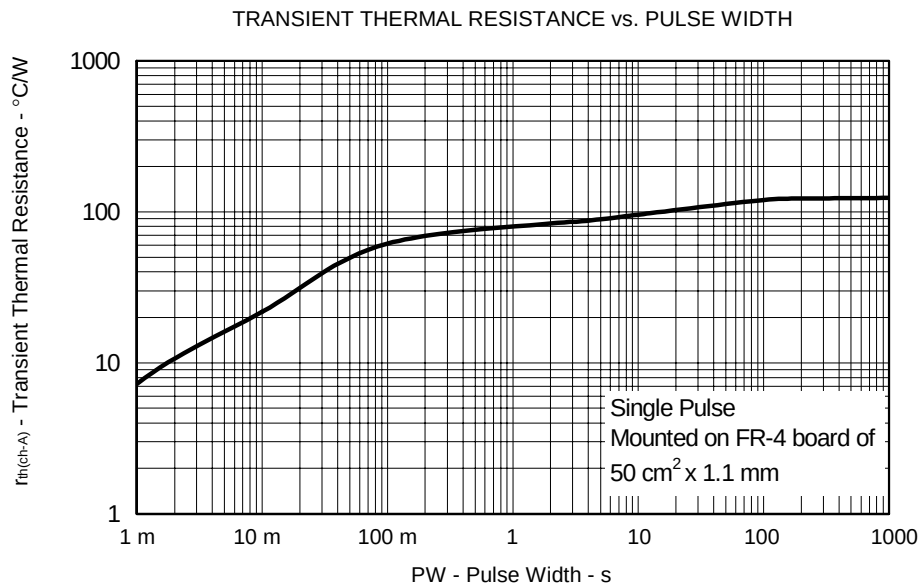
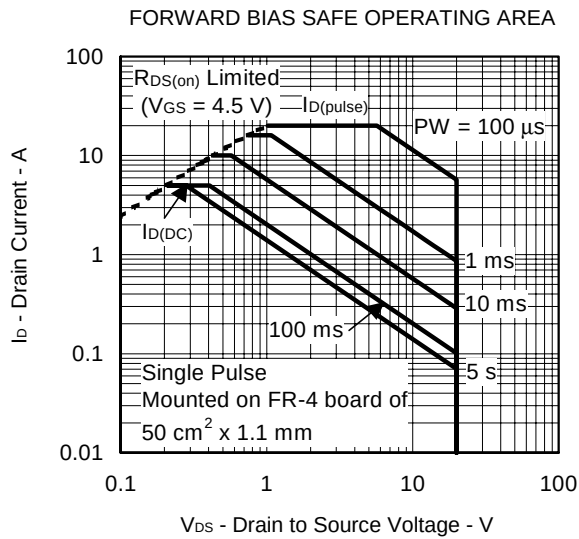
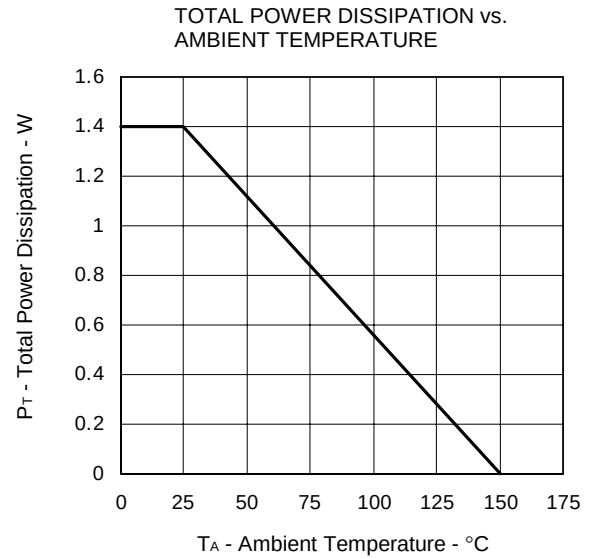
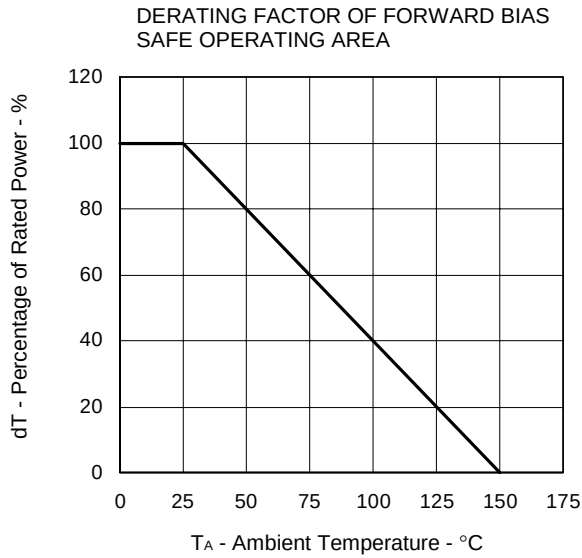
TEST CIRCUIT 1 SWITCHING TIME



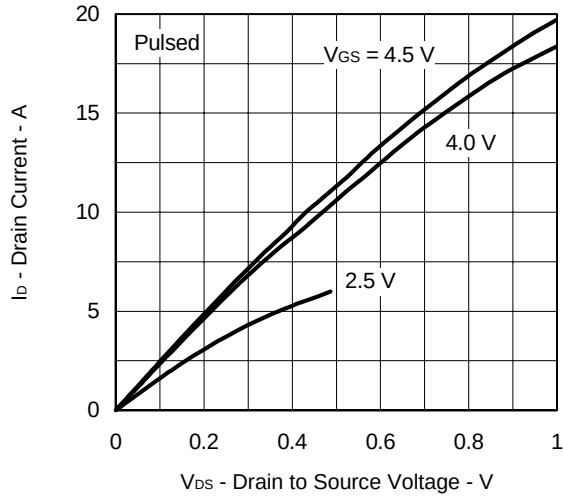
TEST CIRCUIT 2 GATE CHARGE



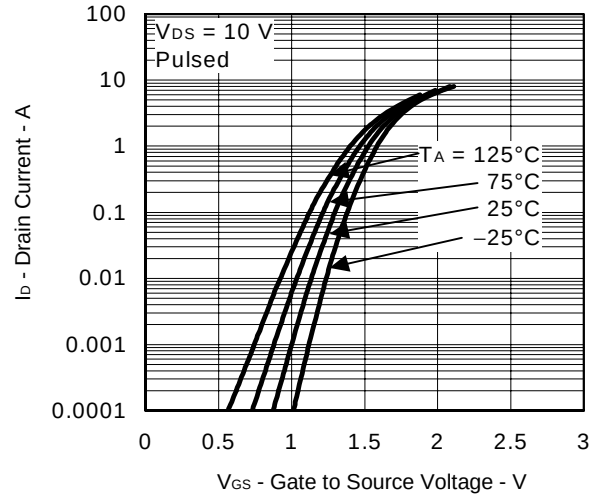
TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)



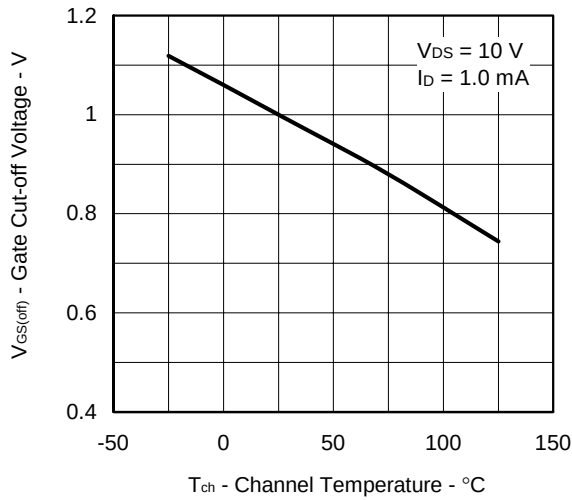
DRAIN CURRENT vs.
DRAIN TO SOURCE VOLTAGE



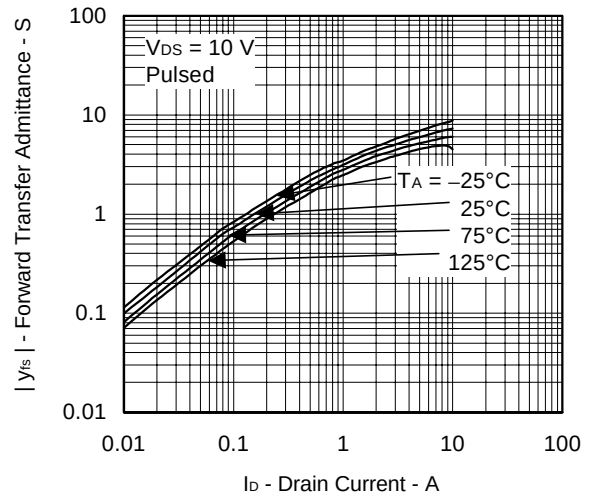
FORWARD TRANSFER CHARACTERISTICS



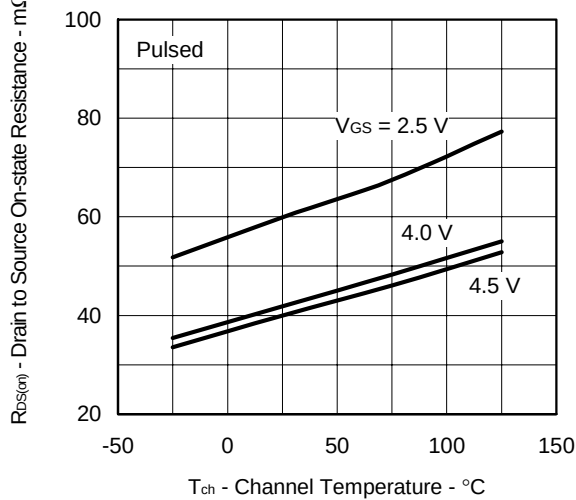
GATE CUT-OFF VOLTAGE vs.
CHANNEL TEMPERATURE



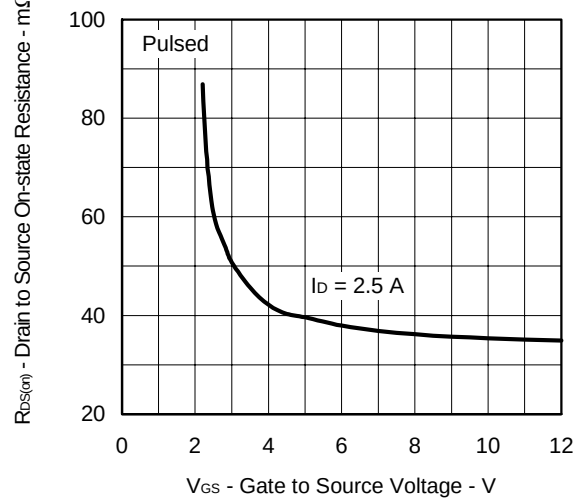
FORWARD TRANSFER ADMITTANCE vs.
DRAIN CURRENT



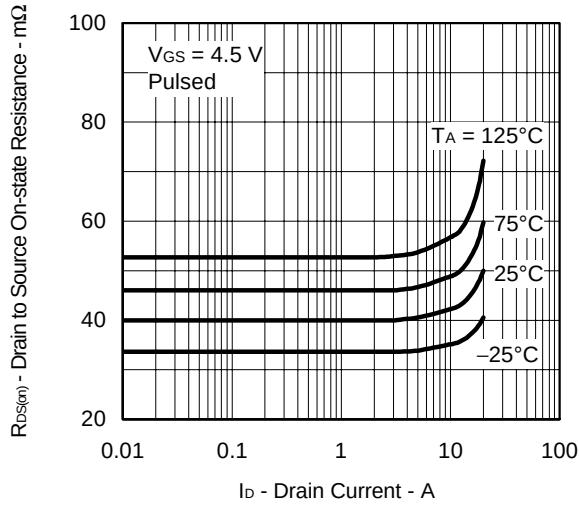
DRAIN TO SOURCE ON-STATE RESISTANCE vs.
CHANNEL TEMPERATURE



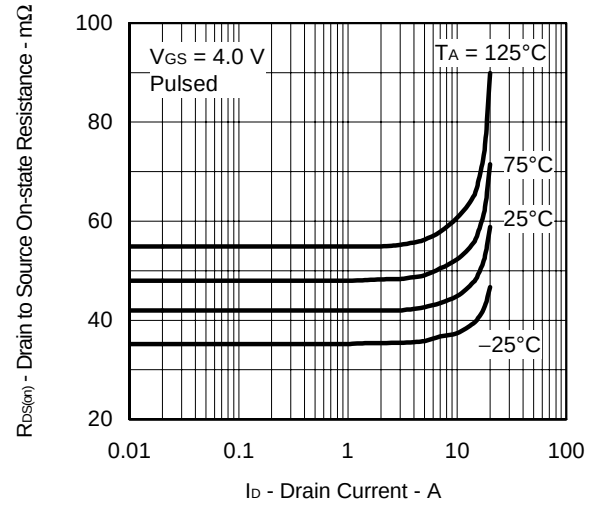
DRAIN TO SOURCE ON-STATE RESISTANCE vs.
GATE TO SOURCE VOLTAGE



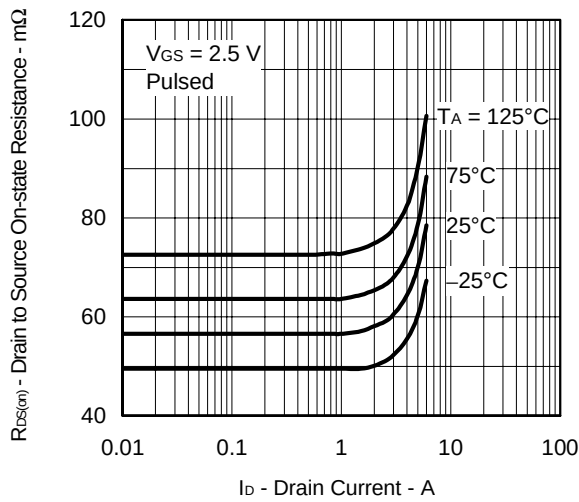
DRAIN TO SOURCE ON-STATE
RESISTANCE vs. DRAIN CURRENT



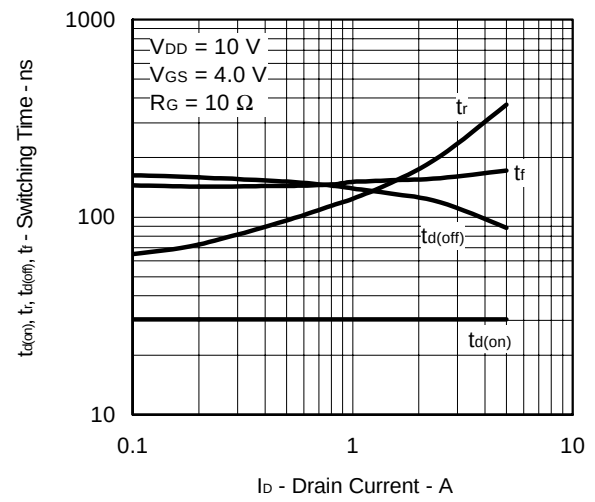
DRAIN TO SOURCE ON-STATE
RESISTANCE vs. DRAIN CURRENT



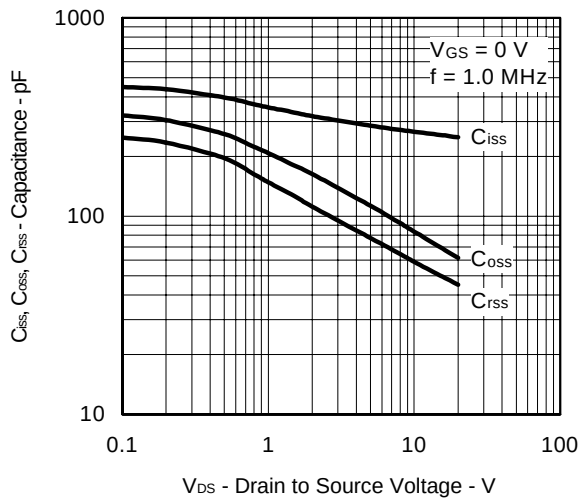
DRAIN TO SOURCE ON-STATE
RESISTANCE vs. DRAIN CURRENT



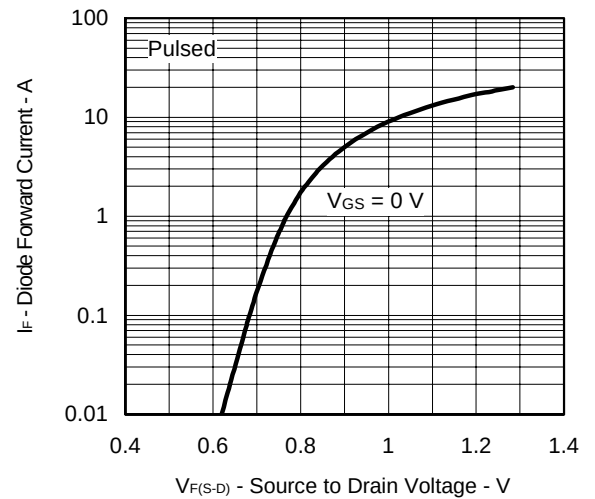
SWITCHING CHARACTERISTICS



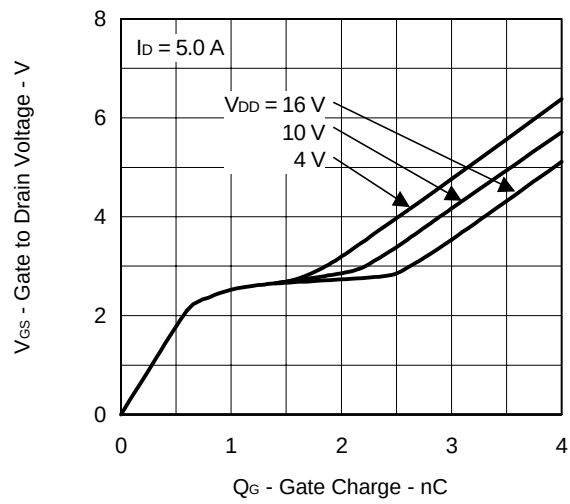
CAPACITANCE vs.
DRAIN TO SOURCE VOLTAGE



SOURCE TO DRAIN DIODE
FORWARD VOLTAGE



DYNAMIC INPUT/OUTPUT CHARACTERISTICS



[MEMO]

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