



UP2003

Power MOSFET

9A, 25V P-CHANNEL LOGIC LEVEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

DESCRIPTION

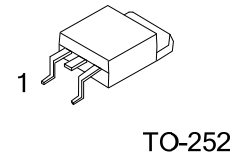
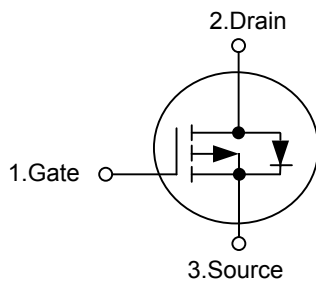
The **UP2003** uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.

FEATURES

* $R_{DS(ON)} < 35 \text{ m}\Omega @ V_{GS} = -4.5 \text{ V}, I_D = -7 \text{ A}$

* $R_{DS(ON)} < 20 \text{ m}\Omega @ V_{GS} = -10 \text{ V}, I_D = -9 \text{ A}$

SYMBOL



TO-252

ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UP2003L-TN3-R	UP2003G-TN3-R	TO-252	G	D	S	Tape Reel
UP2003L-TN3-T	UP2003G-TN3-T	TO-252	G	D	S	Tube

UP2003L-TN3-R (1) Packing Type (2) Package Type (3) Lead Plating		(1) R: Tape Reel, T: Tube (2) TN3: TO-252 (3) L: Lead Free Plating, Blank: Pb/Sn
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■ ABSOLUTE MAXIMUM RATINGS (T_C = 25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain Source Voltage	V _{DSS}	-25	V
Gate Source voltage	V _{GSS}	±20	V
Continuous Drain Current	I _D	-9	A
Pulsed Drain Current (Note 1)	I _{DM}	-36	
Power Dissipation	P _D	2.5	W
Junction Temperature	T _J	+150	°C
Storage Temperature	T _{STG}	-55 ~ +150	

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL DATA

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction-to-Ambient	θ _{JA}			50	°C/W
Junction-to-Case	θ _{JC}			25	°C/W

■ ELECTRICAL CHARACTERISTICS (T_C = 25°C, unless otherwise specified)

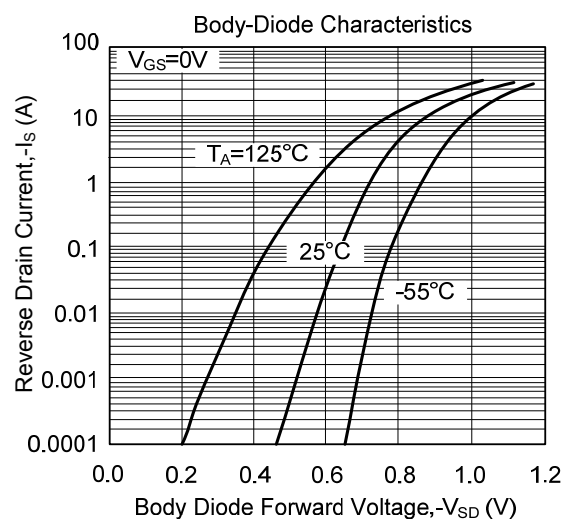
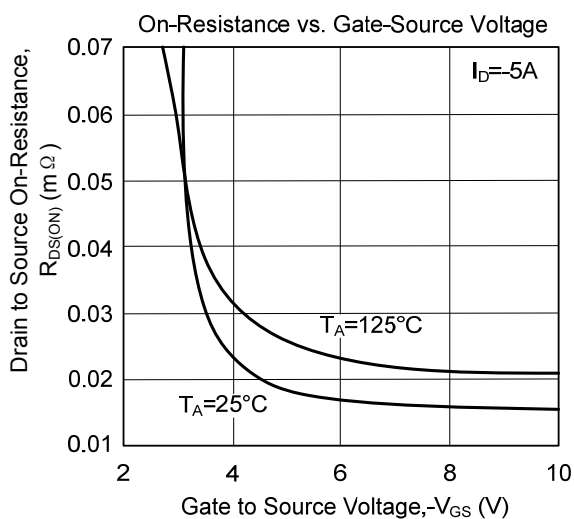
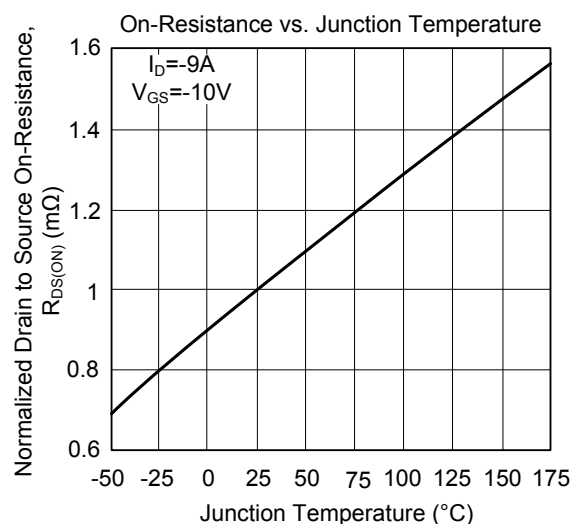
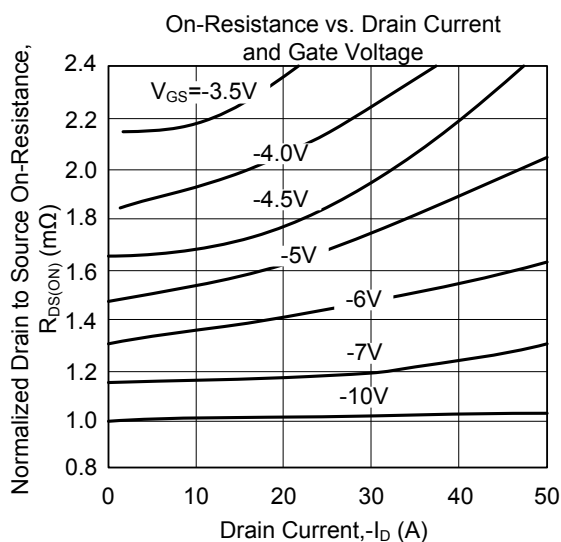
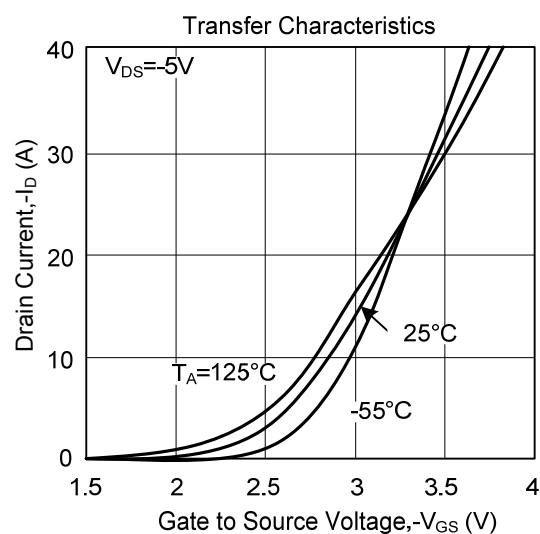
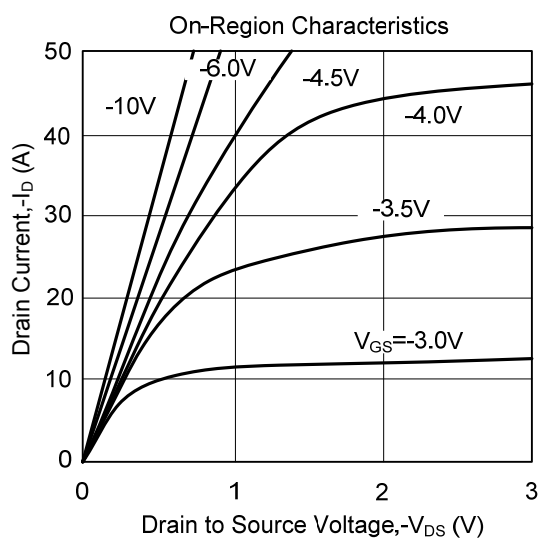
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D = -250μA	-25			V
Drain Source Leakage Current	I _{DSS}	V _{DS} = -25V, V _{GS} =0V			-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
ON CHARACTERISTICS						
Gate-Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =-250μA	-1.0	-1.5	-3.0	V
On-State Drain Current (Note 2)	I _{D(ON)}	V _{DS} = -5V, V _{GS} = -10V	-50			A
Drain-Source On-Resistance (Note 2)	R _{DS(ON)}	V _{GS} =-4.5V, I _D =-7A		25	35	mΩ
		V _{GS} =-10V, I _D =-9A		15	20	
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =-15V, V _{GS} =0V, f=1MHz		1610		pF
Output Capacitance	C _{OSS}			410		
Reverse Transfer Capacitance	C _{RSS}			200		
SWITCHING PARAMETERS (Note 3)						
Gate to Source Charge	Q _G	V _{DS} =-12.5V _{(BR)DSS} , V _{GS} =-10V, I _D =-9 A		17	24	nC
Gate Charge at Threshold	Q _{GS}			5		
Gate to Drain Charge	Q _{GD}			6		
Turn-ON Delay Time	t _{D(ON)}	V _{DS} =-12.5V, I _D ≈-1A, V _{GS} =-10V, R _{GS} =6Ω ,R _L =1Ω		6.2	9.3	ns
Turn-ON Rise Time	t _R			10		
Turn-OFF Delay Time	t _{D(OFF)}			18		
Turn-ON Delay Time	t _{D(ON)}			10		
Turn-OFF Fall-Time	t _F			5		
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Diode Continuous Forward Current	I _S				-9	A
Diode Pulse Current (Note 1)	I _{SM}				-36	
Forward Voltage (Note 2)	V _{SD}	I _F =I _S , V _{GS} =0V			-1.2	V

Note: 1. Pulse width limited by maximum junction temperature.

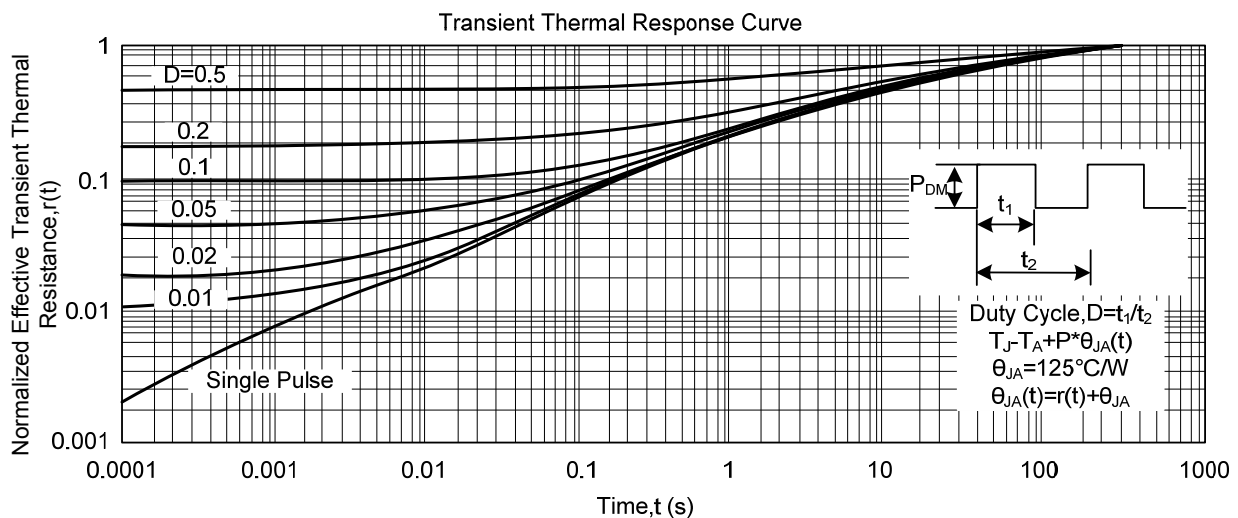
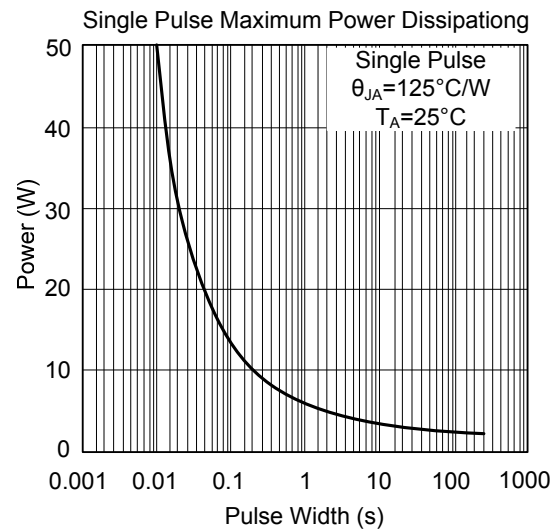
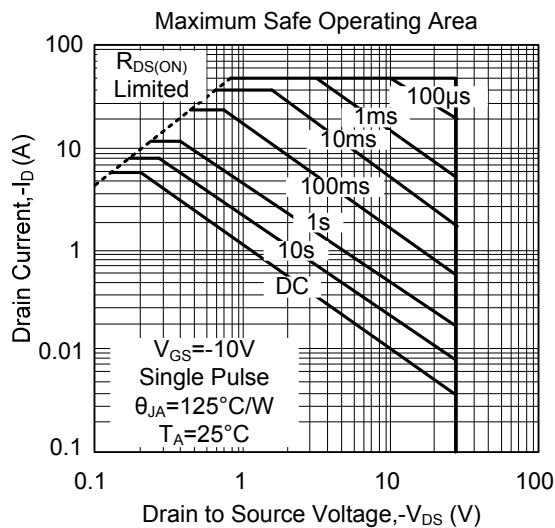
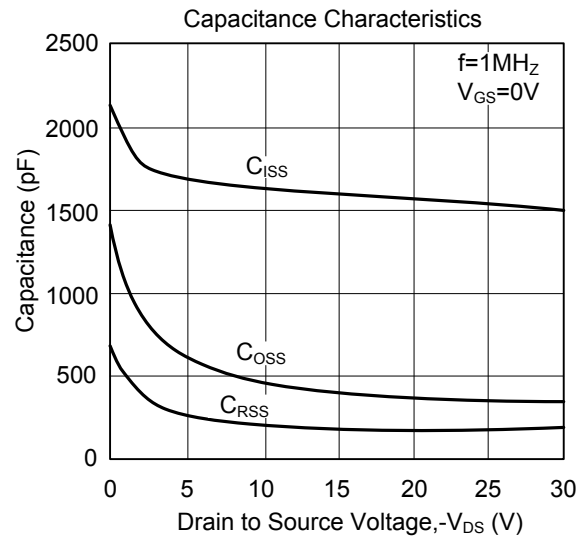
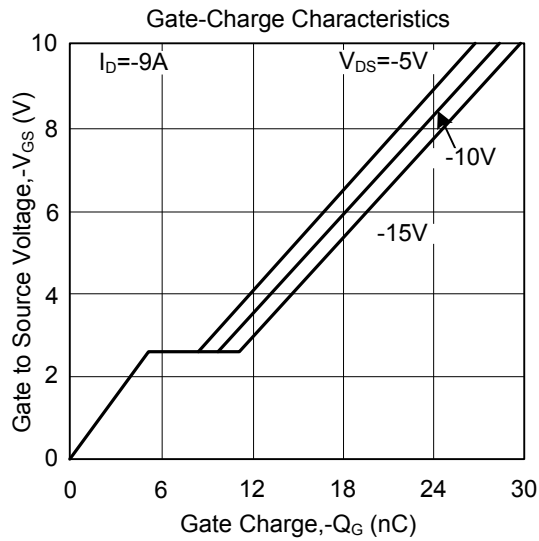
2. Pulse test: Pulse Width ≤ 300μsec, Duty Cycle ≤ 2%

3. Independent of operating temperature.

■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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