

**UTT8P03-H***Power MOSFET***-8A, -30V, P-CHANNEL MOSFET****DESCRIPTION**

The UTC **UTT8P03-H** is a P-channel MOSFET. it uses UTC's advanced technology to provide the customers with a minimum on state resistance, high switching speed and low gate charge.

The UTC **UTT8P03-H** is suitable for load switching.

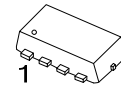
FEATURES

* $R_{DS(ON)} \leq 26m\Omega$ @ $V_{GS} = -10V$, $I_D = -8A$

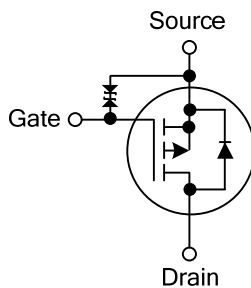
$R_{DS(ON)} \leq 34m\Omega$ @ $V_{GS} = -4.5V$, $I_D = -7A$

* High switching speed

* Low gate charge



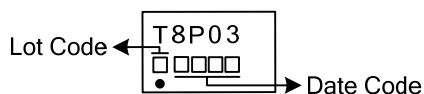
DFN3020-8

SYMBOL**ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTT8P03L-K08-3020-R	UTT8P03G-K08-3020-R	DFN3020-8	D	D	D	G	S	D	D	D	Tape Reel

Note: Pin Assignment: D: Drain G: Gate S: Source

UTT8P03G-K08-3020-R (1) Packing Type (2) Package Type (3) Green Package		(1) R: Tape Reel (2) K08-3020: DFN3020-8 (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING

■ ABSOLUTE MAXIMUM RATINGS ($T_C=25^{\circ}\text{C}$, unless otherwise noted)

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage			V _{DSS}	-30	V
Gate-Source Voltage			V _{GSS}	±20	V
Drain Current	Continuous	T _C =25°C	I _D	-8	A
		T _C =70°C		-6	A
	Pulsed (Note 3)		I _{DM}	-60	A
Power Dissipation (Note2)			P _D	3	W
Junction Temperature			T _J	-55~+150	°C
Storage Temperature Range			T _{STG}	-55~+150	°C

Notes: 1. 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.
 2. The power dissipation P_D is based on $T_{J(MAX)}=150^{\circ}\text{C}$, using $\leq 10\text{s}$ junction-to-ambient thermal resistance.
 3. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^{\circ}\text{C}$. Ratings are based on low frequency and duty cycles to keep initial $T_J=25^{\circ}\text{C}$

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	90	$^{\circ}\text{C/W}$
Junction to Case	θ_{JC}	40	$^{\circ}\text{C/W}$

■ ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$, unless otherwise noted)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =-250μA, V _{GS} =0V	-30			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =-30V, V _{GS} =0V			-1	μA
			V _{DS} =-30V, V _{GS} =0V, T _J =55°C			-5	μA
Gate-Source Leakage Current	Forward	I _{GSS}	V _{GS} =+20V, V _{DS} =0V			+10	uA
	Reverse		V _{GS} =-20V, V _{DS} =0V			-10	uA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =-250μA	-0.8	-1.3	-1.8	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =-10V, I _D =-8A		21	26	mΩ
			V _{GS} =-4.5V, I _D =-7A		27	34	mΩ
On State Drain Current		I _{D(ON)}	V _{GS} =-10V, V _{DS} =-5V	-60			A
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =-15V, f=1.0MHz		930		pF
Output Capacitance		C _{OSS}			170		pF
Reverse Transfer Capacitance		C _{RSS}			120		pF
Gate Resistance		R _G	V _{GS} =0V, V _{DS} =0V, f=1MHz		8		Ω
SWITCHING PARAMETERS (Note 2)							
Total Gate Charge		Q _G	V _{GS} =-4.5V, V _{DS} =-15V, I _D =-5A		11	17	nC
Gate to Source Charge		Q _{GS}			3.4		nC
Gate to Drain Charge		Q _{GD}			4.2		nC
Turn-ON Delay Time		t _{D(ON)}	V _{DS} =-1 5V, V _{GS} =-10V, R _{GEN} =6Ω, I _D =-1A		5.8	11	ns
Rise Time		t _R			18.8	36	ns
Turn-OFF Delay Time		t _{D(OFF)}			46.9	90	ns
Fall-Time		t _F			12.3	23	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I _S				-8.5	A
Maximum Body-Diode Pulsed Current		I _{Sm}				-17	A
Drain-Source Diode Forward Voltage		V _{SD}	I _S =-1A, V _{GS} =0V		-0.74	-1	V

Notes: 1. The value of θ_{JA} is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$. The value in any given application depends on the user's specific board design.

2. The power dissipation P_D is based on $T_{J(MAX)}=150^\circ\text{C}$, using $\leq 10\text{s}$ junction-to-ambient thermal resistance.

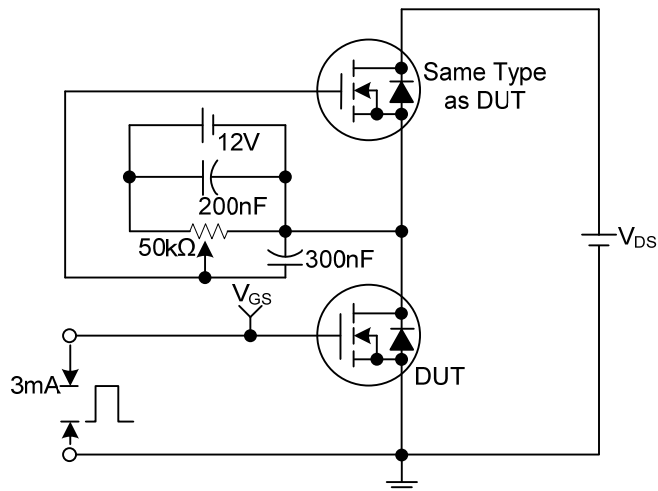
3. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^\circ\text{C}$. Ratings are based on low frequency and duty cycles to keep initial $T_J=25^\circ\text{C}$

4. The θ_{JA} is the sum of the thermal impedance from junction to lead θ_{JL} and lead to ambient

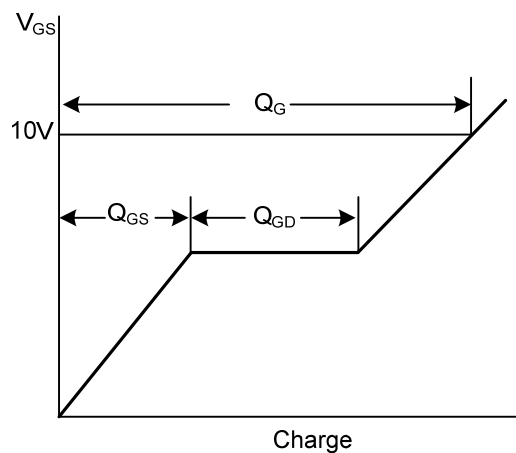
5. The static characteristics in Figures 1 to 6 are obtained using $<300\mu\text{s}$ pulses, duty cycle 0.5% max

6. These curves are based on the junction-to-ambient thermal impedance which is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, assuming a maximum junction temperature of $T_{J(MAX)}=150^\circ\text{C}$. The SOA curve provides a single pulse rating.

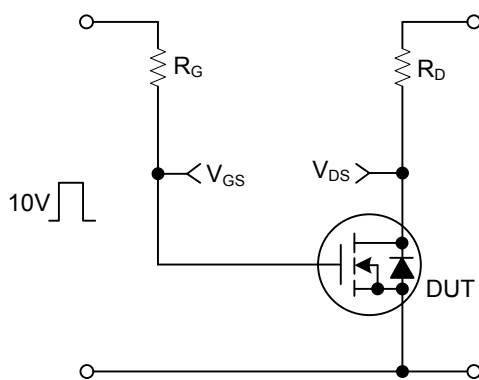
■ TEST CIRCUITS AND WAVEFORMS



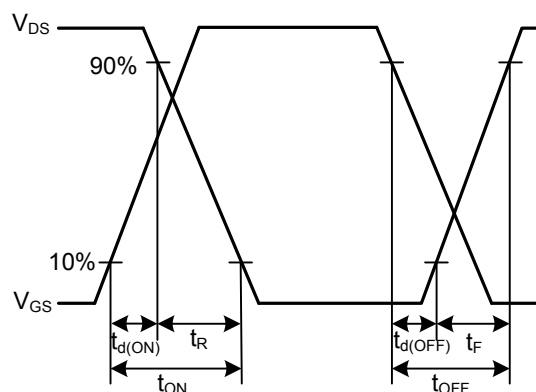
Gate Charge Test Circuit



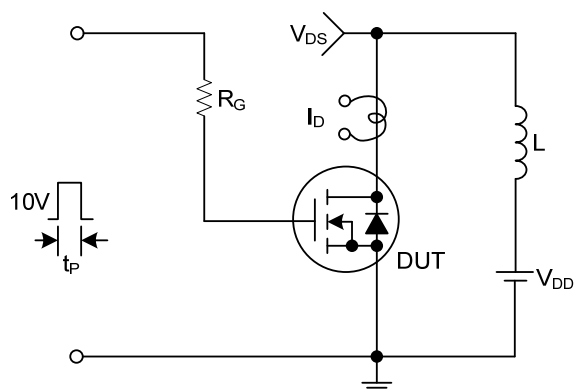
Gate Charge Waveforms



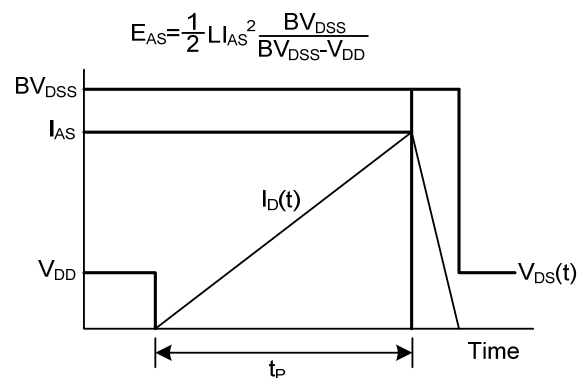
Resistive Switching Test Circuit



Resistive Switching Waveforms

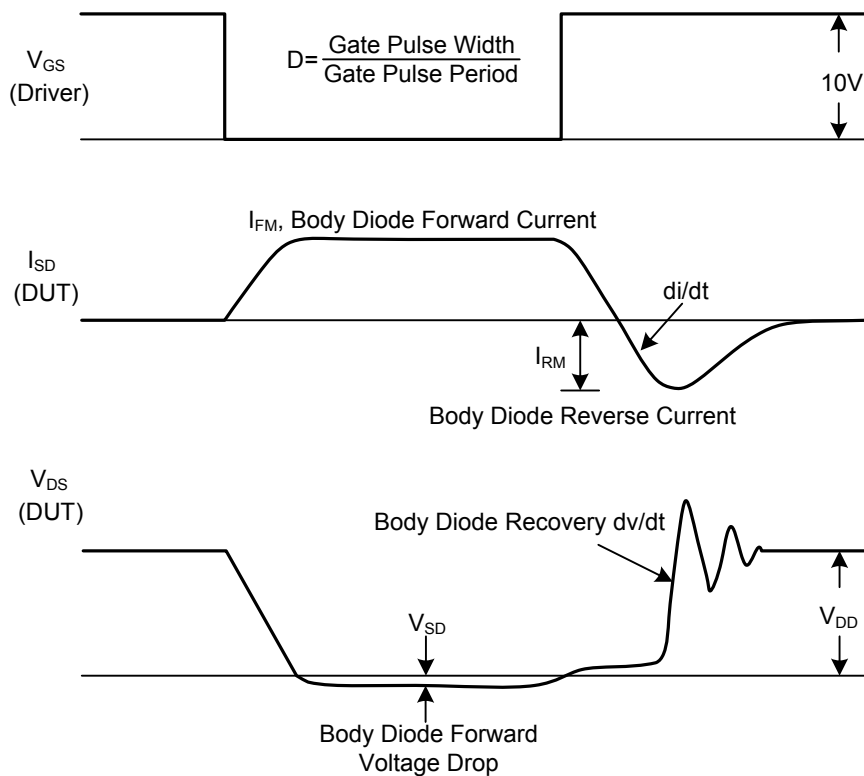
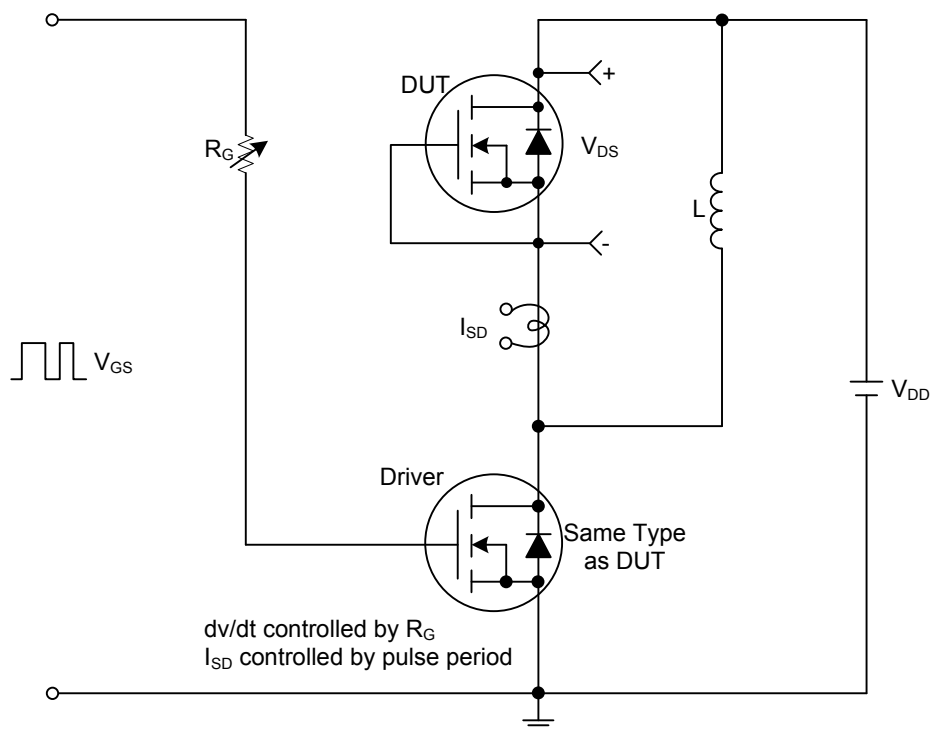


Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

■ TEST CIRCUITS AND WAVEFORMS (Cont.)



Peak Diode Recovery dv/dt Test Circuit and Waveforms

TYPICAL CHARACTERISTICS

Figure 1. On-Region Characteristics (Note 5)

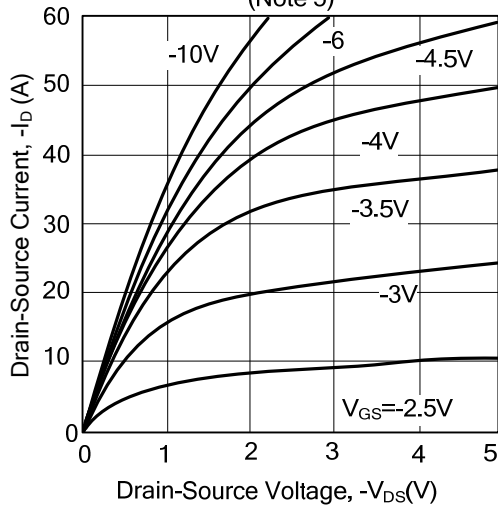


Figure 2. Transfer Characteristics (Note 5)

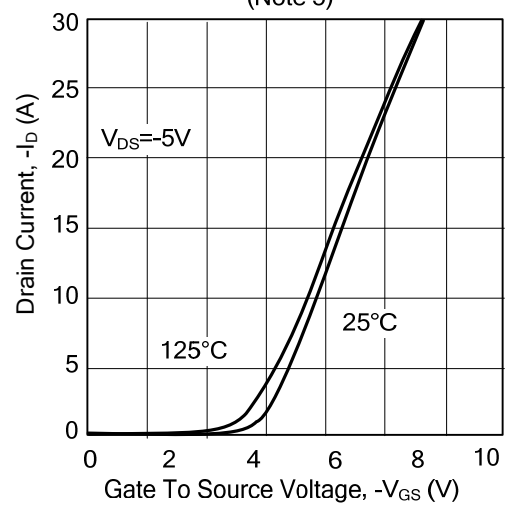


Figure 3. On-Resistance vs. Drain Current and Gate Voltage (Note 5)

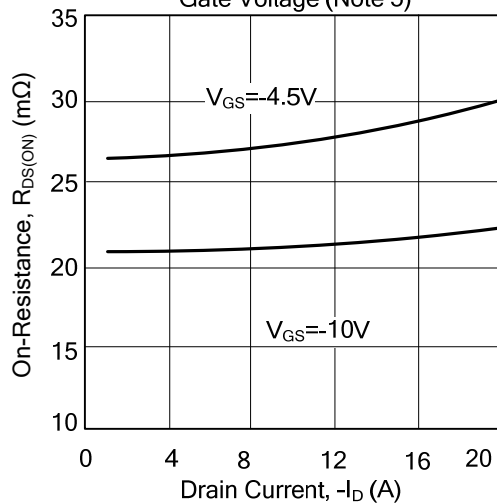


Figure 4. On-Resistance vs. Junction Temperature (Note 5)

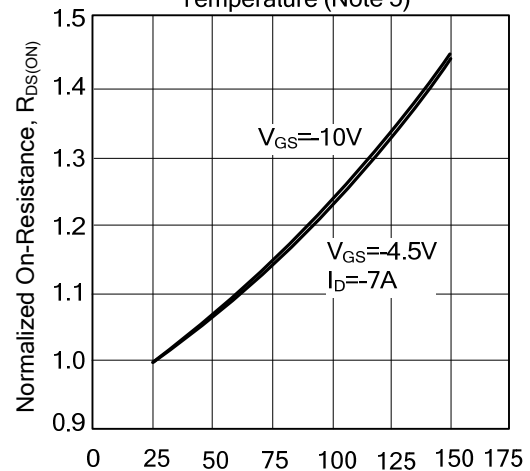


Figure 5. On-Resistance vs. Gate-Source Voltage (Note 5)

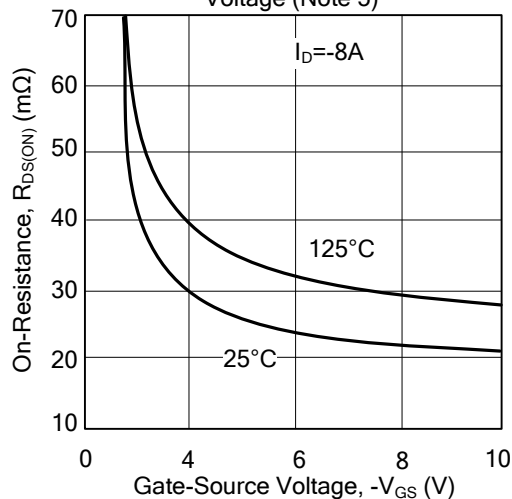
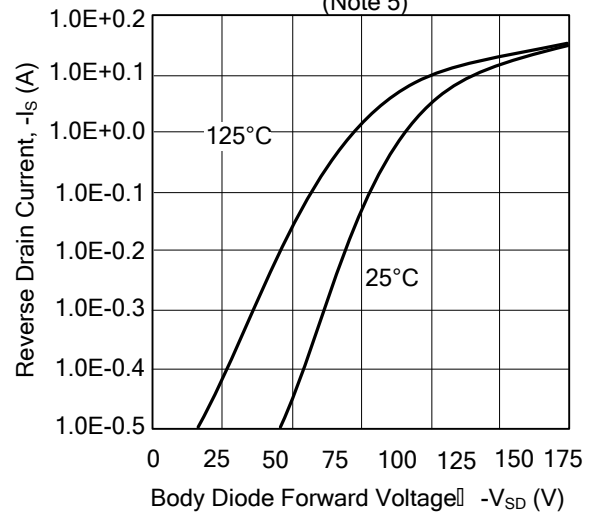


Figure 6. Body-Diode Characteristics (Note 5)



TYPICAL CHARACTERISTICS (Cont.)

Figure 7. Capacitance Characteristics (Note 5)

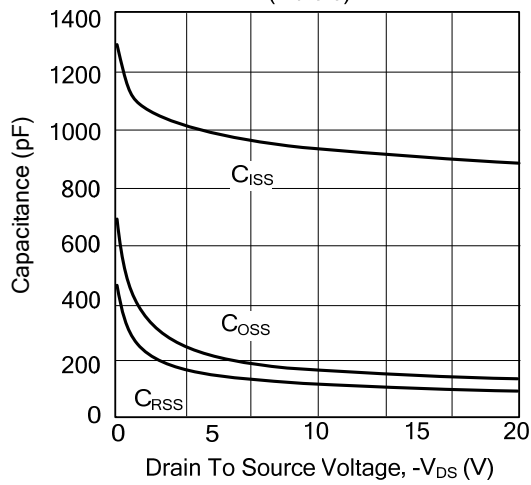


Figure 8. Maximum Forward Biased Safe Operation Area (Note 6)

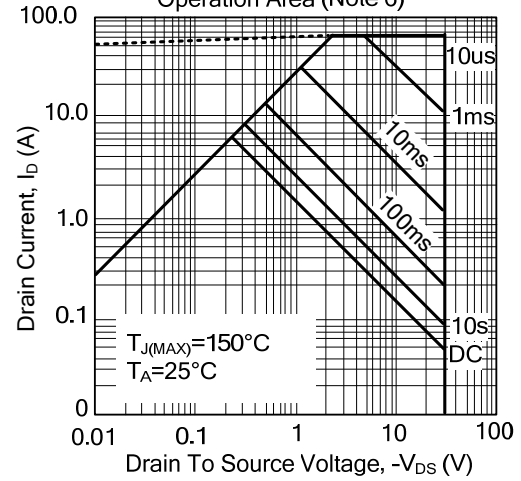


Figure 9. Single Pulse Power Rating Junction-to-Ambient (Note 6)

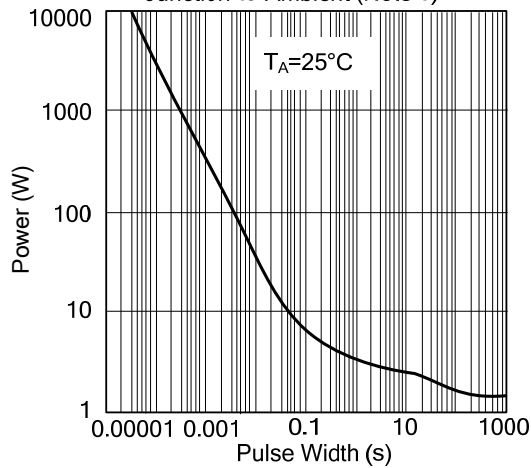


Figure 10: Normalized Maximum Transient Thermal Impedance (Note 6)

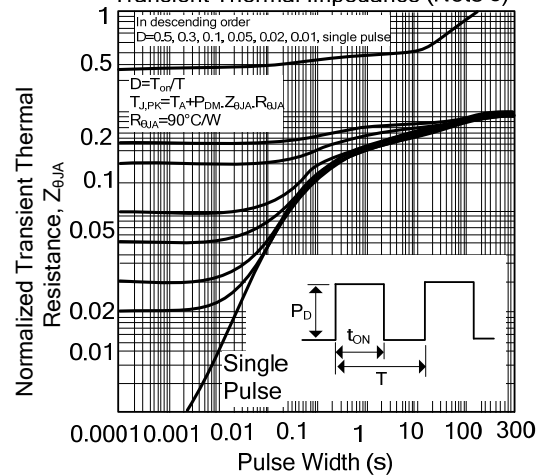
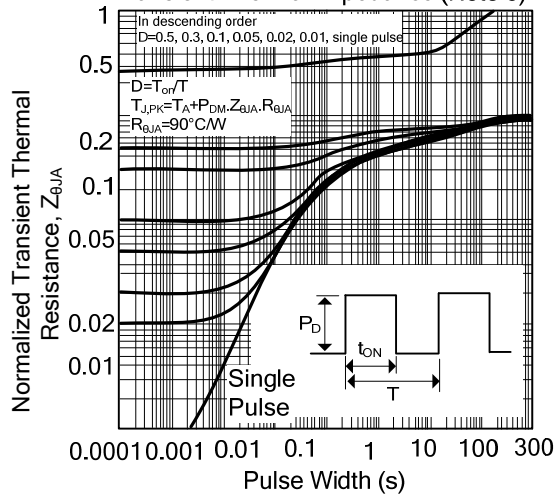


Figure 11: Normalized Maximum Transient Thermal Impedance (Note 6)



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