



## UK3919

Power MOSFET

### SWITCHING N-CHANNEL POWER MOSFET

#### DESCRIPTION

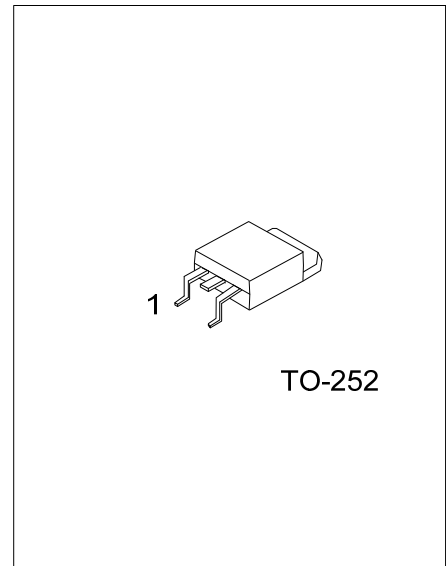
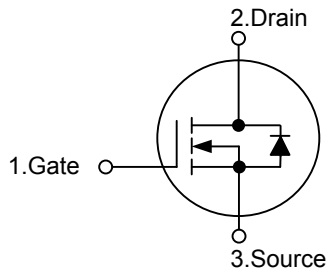
This **UK3919** N-Channel Logic Level MOSFET is produced using UTC Semiconductor advanced Power Trench process which has been tailored to make the on-state resistance minimum and yet maintain low gate charge for superior switching performance especially.

The **UK3919** is well suited for where low in-line power loss is needed in a very small outline surface mount package, such as low voltage and battery powered applications.

#### FEATURES

- \*  $R_{DS(ON)} = 5.6m\Omega @ V_{GS} = 10 V$
- \* Low capacitance
- \* Optimized gate charge
- \* Fast switching capability
- \* Avalanche energy specified

#### SYMBOL



\*Pb-free plating product number:UK3919L

#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Normal	Lead Free Plating		1	2	3	
UK3919-TN3-R	UK3919L-TN3-R	TO-252	G	D	S	Tape Reel
UK3919-TN3-T	UK3919L-TN3-T	TO-252	G	D	S	Tube

<p>UK3919L-TN3-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Lead Plating</p>	<p>(1) R: Tape Reel, T: Tube</p> <p>(2) TN3:TO-252</p> <p>(3) L: Lead Free Plating, Blank: Pb/Sn</p>
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■ ABSOLUTE MAXIMUM RATINGS ( $T_C = 25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain to Source Voltage	$V_{DS}$	25	V
Gate to Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	$\pm 64$	A
Pulsed Drain Current (Note1)	$I_{DM}$	$\pm 256$	A
Single Avalanche Current (Note2)	$I_{AS}$	27	A
Single Avalanche Energy (Note2)	$E_{AS}$	73	mJ
Total Power Dissipation	$P_D$	36	W
Storage Temperature	$T_{STG}$	-55 ~ +150	$^\circ\text{C}$

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.

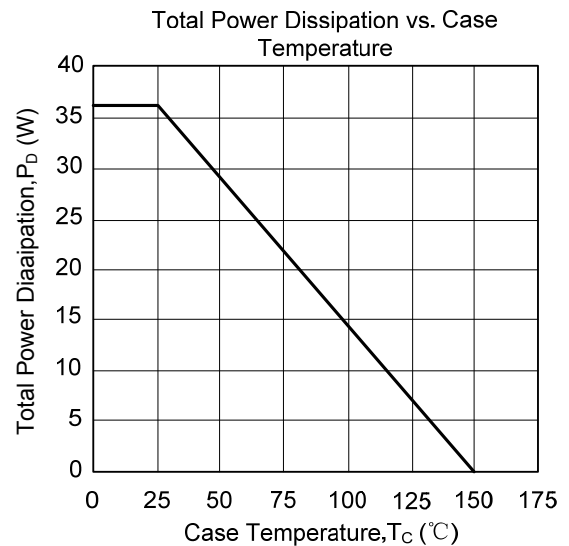
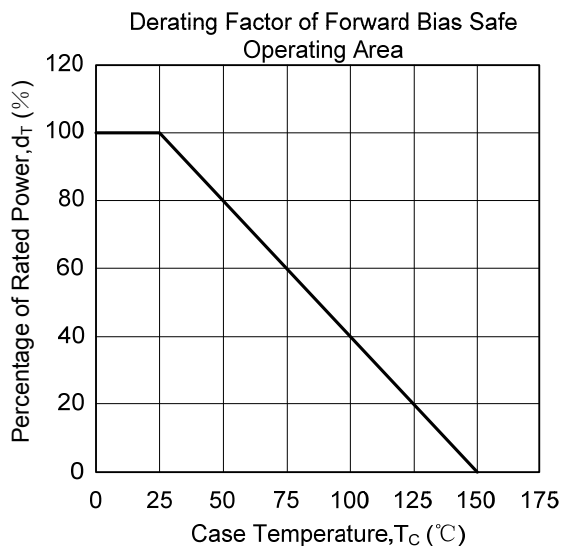
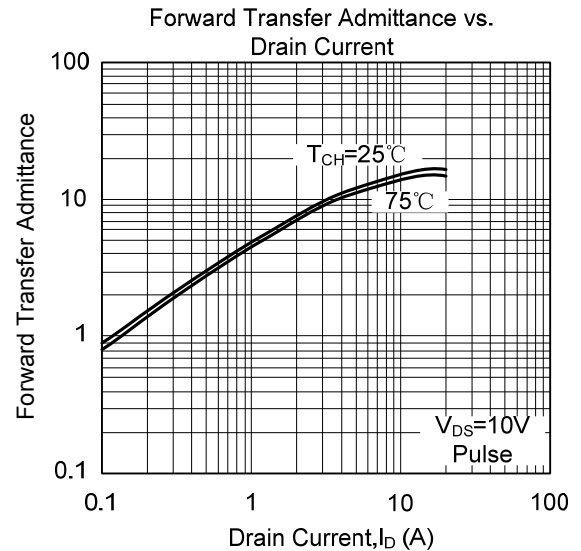
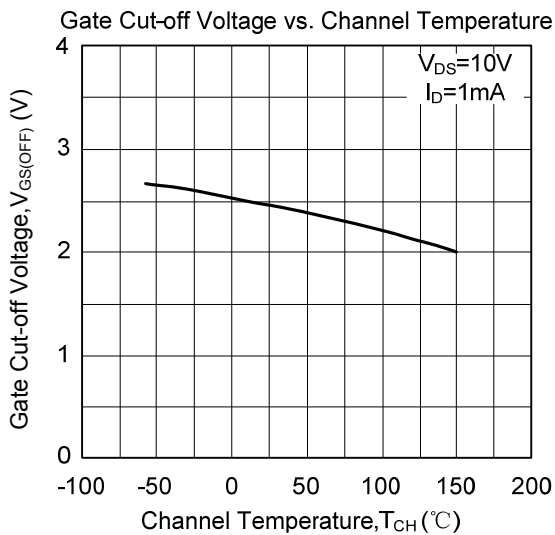
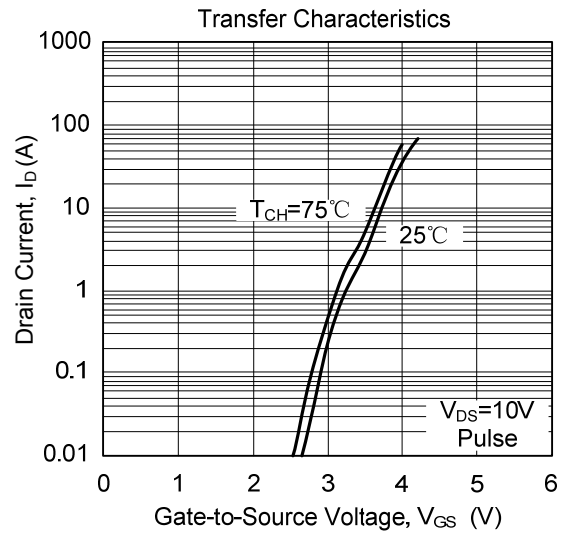
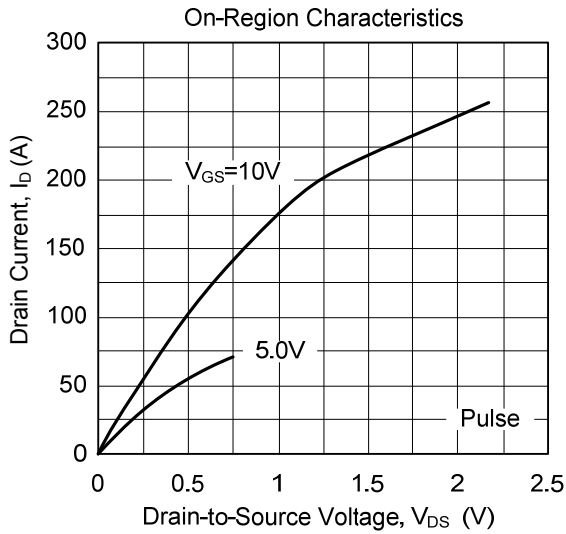
■ ELECTRICAL CHARACTERISTICS ( $T_C = 25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 25\text{ V}, V_{GS} = 0\text{ V}$			10	$\mu\text{A}$
Gate-Body Leakage Current	$I_{GSS}$	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			$\pm 100$	nA
<b>ON CHARACTERISTICS</b>						
Gate-Threshold Voltage	$V_{GS(OFF)}$	$V_{DS} = 10\text{ V}, I_D = 1\text{ mA}$	2.0	2.5	3.0	V
Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS} = 10\text{ V}, I_D = 32\text{ A}$		4.5	5.6	m $\Omega$
		$V_{GS} = 5.0\text{ V}, I_D = 16\text{ A}$		6.8	13.7	
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	$C_{ISS}$	$V_{DS} = 10\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$		2050		pF
Output Capacitance	$C_{OSS}$			460		
Reverse Transfer Capacitance	$C_{RSS}$			330		
<b>SWITCHING PARAMETERS</b>						
Gate to Source Charge	$Q_G$	$V_{DD} = 20\text{ V}, V_{GS} = 10\text{ V}, I_D = 64\text{ A}$		42		nC
Gate Charge at Threshold	$Q_{GS}$			8		
Gate to Drain Charge	$Q_{GD}$			15		
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD} = 12.5\text{ V}, I_D = 32\text{ A}, V_{GS} = 10\text{ V}, R_G = 10\ \Omega$		16		ns
Turn-ON Rise Time	$t_R$			19		
Turn-OFF Delay Time	$t_{D(OFF)}$			53		
Turn-OFF Fall-Time	$t_F$			22		
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Body Diode Forward Voltage	$V_{SD}$	$I_F = 64\text{ A}, V_{GS} = 0\text{ V}$		0.97		V
Reverse Recovery Time	$t_{RR}$	$I_F = 64\text{ A}, V_{GS} = 0\text{ V}, di/dt = 100\text{ A}/\mu\text{s}$		23		ns
Reverse Recovery Charge	$Q_{RR}$			11		nC

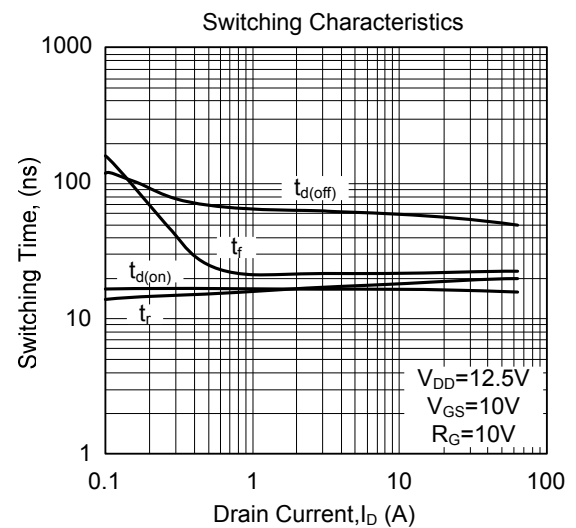
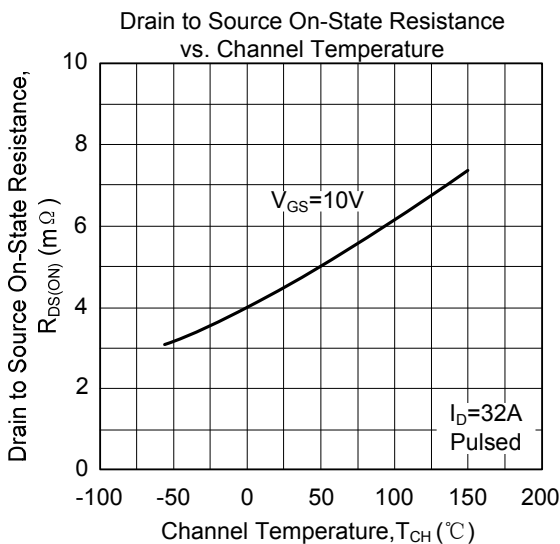
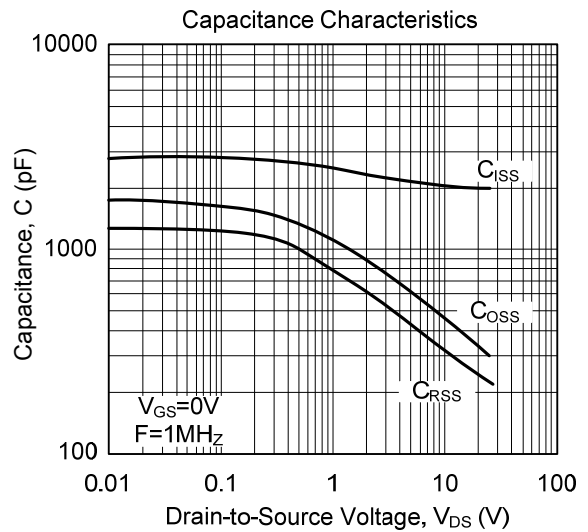
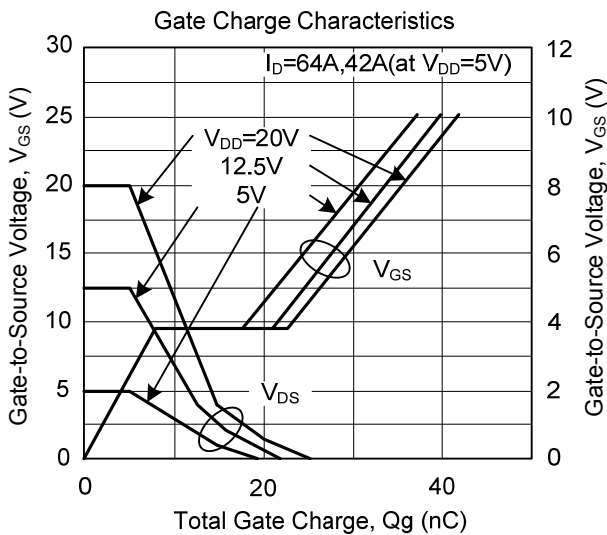
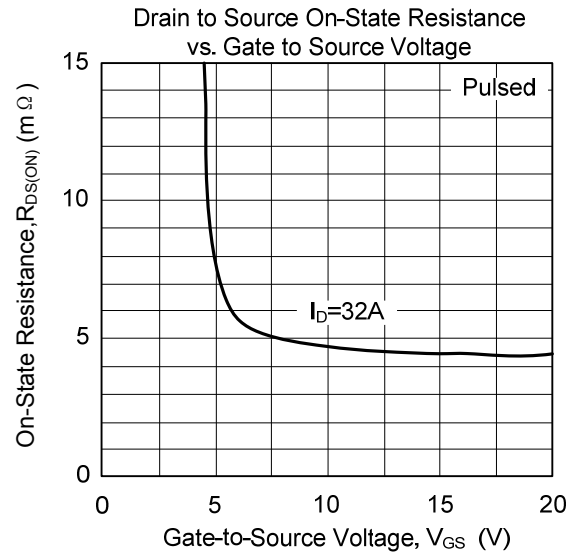
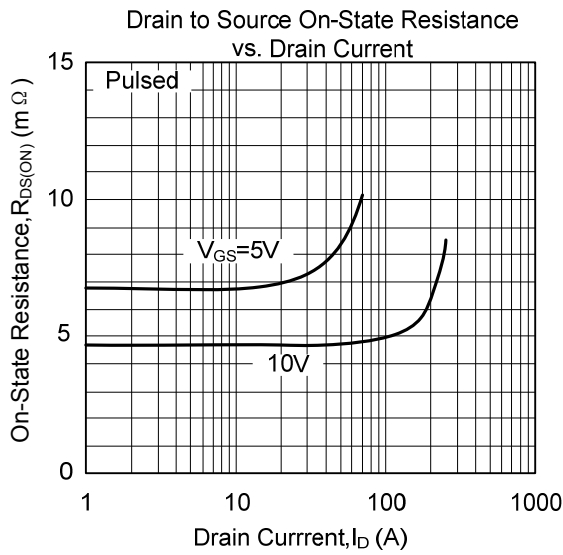
Notes: 1.  $PW \leq 10\ \mu\text{s}$ , Duty Cycle  $\leq 1\%$

2. Starting  $T_{CH} = 25^\circ\text{C}$ ,  $V_{DD} = 12.5\text{ V}$ ,  $R_G = 25\ \Omega$ ,  $V_{GS} = 20 \rightarrow 0\text{ V}$

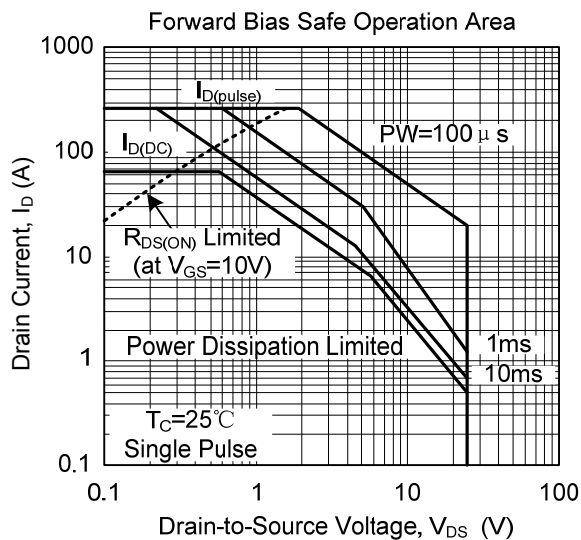
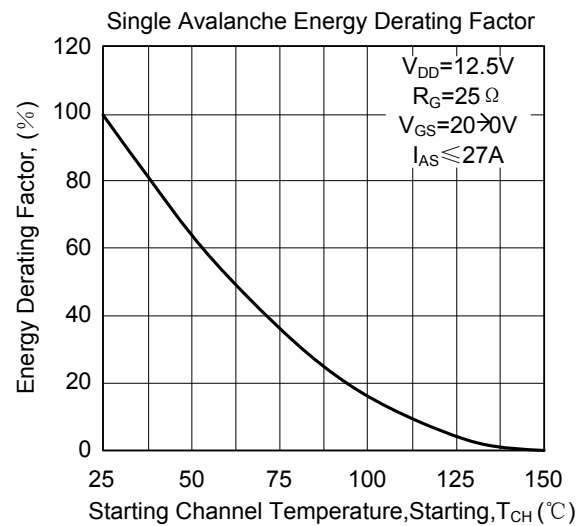
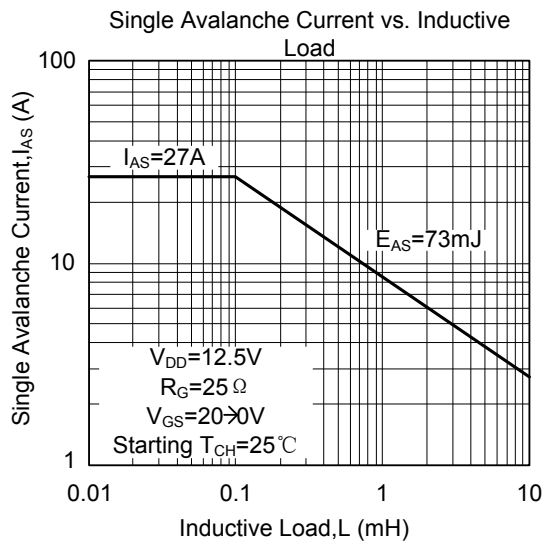
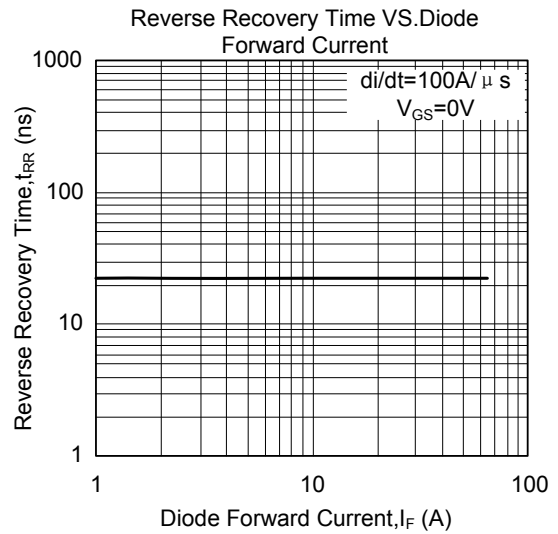
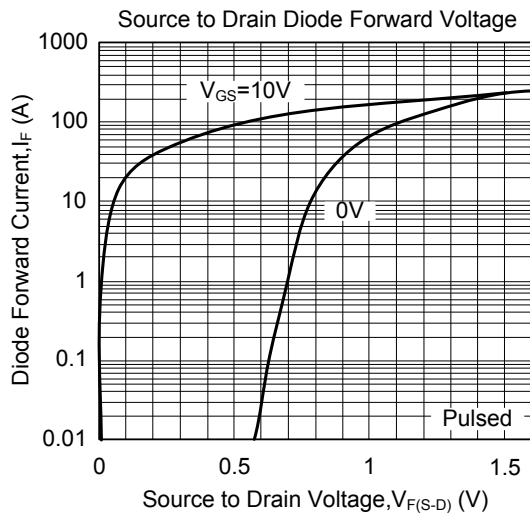
## TYPICAL CHARACTERISTICS



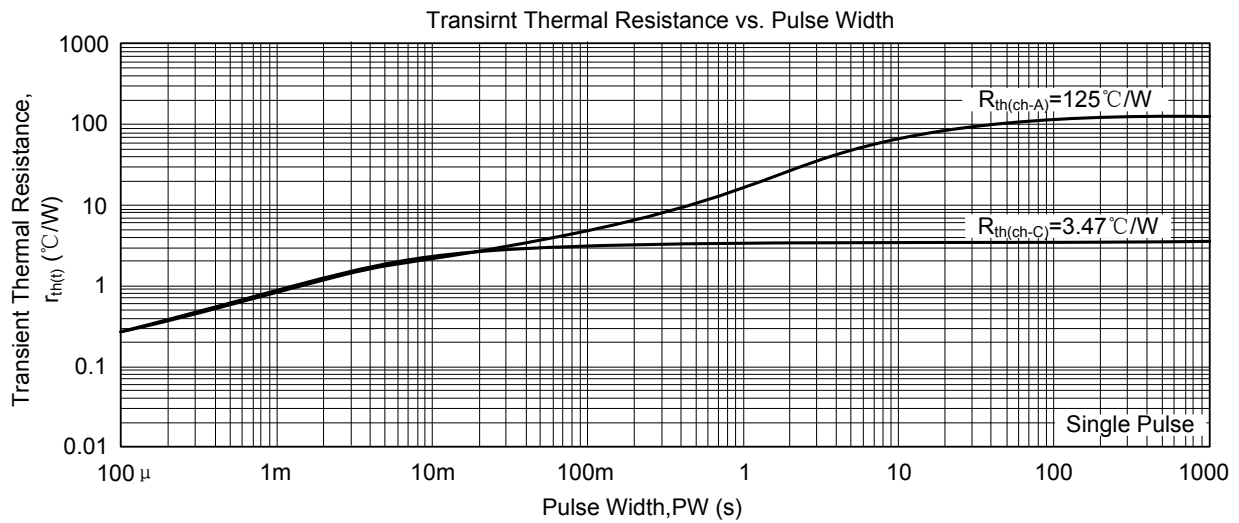
■ TYPICAL CHARACTERISTICS(Cont.)



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■ TYPICAL CHARACTERISTICS(Cont.)



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