

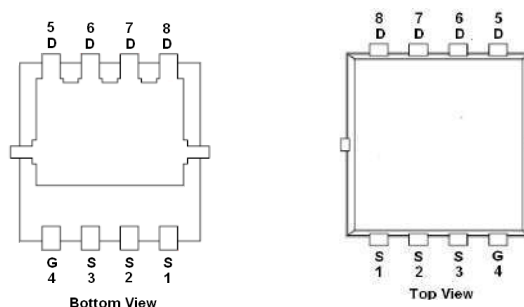
➤ General Description

This PAP74TD09CSA N-Channel enhancement mode power field effect transistor is the high density trench technology and this advanced technology can provide excellent $R_{ds(On)}$ performance and efficiency for power switching and load switching application., this device also comply with the RoHS and Green Product requirement with full function reliability approved.

➤ Feature

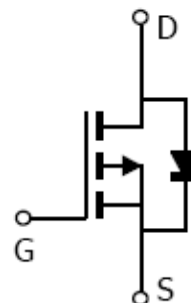
- Green Device Available
- Super Low Gate Charge
- 100% EAS Guaranteed
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology
- DFN3.3x3.3-8L package design

➤ DFN3.3x3.3-8L



➤ Application

- DC/DC Converters
- POL



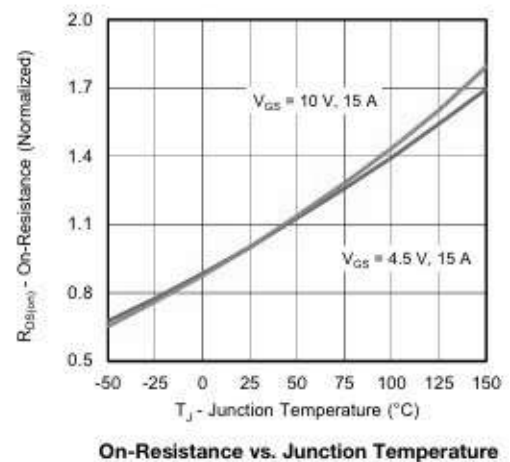
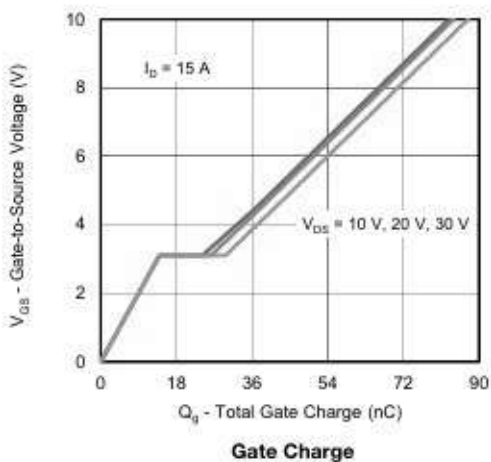
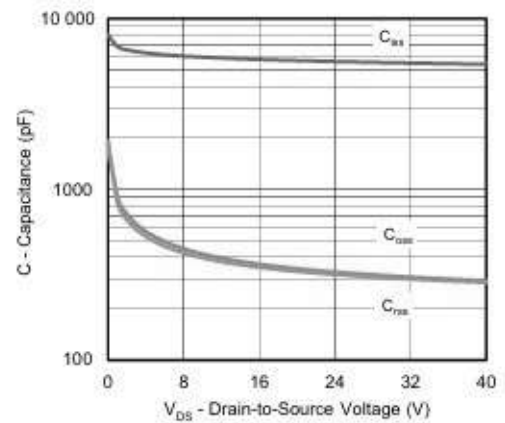
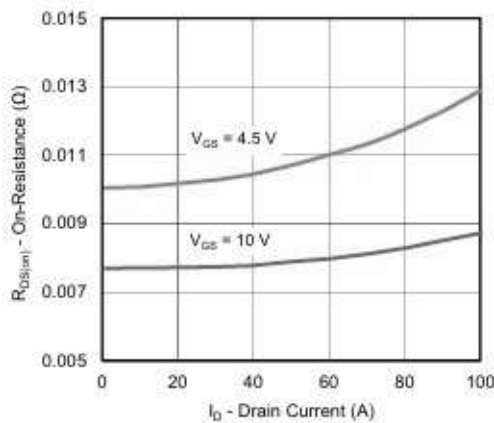
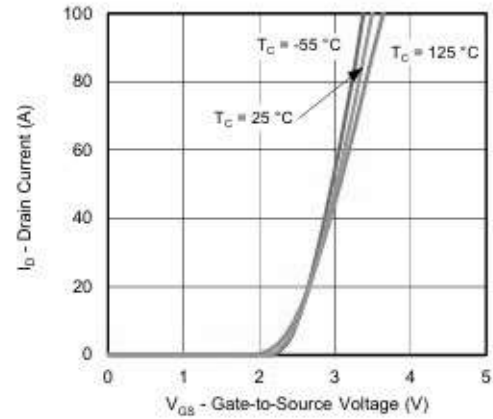
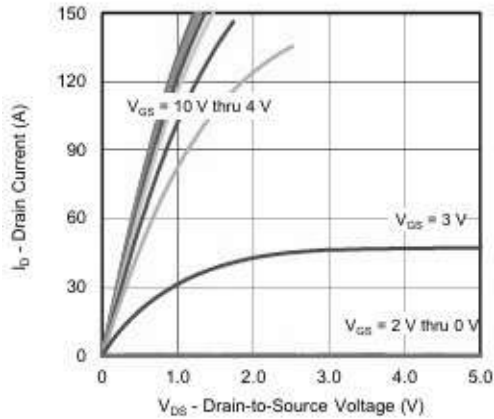
➤ Absolute Maximum Ratings

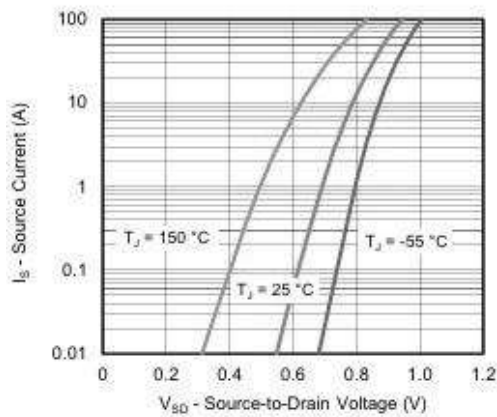
Parameter			Symbol	Typical	Unit
Drain-Source Voltage			V_{DSS}	-40	V
Gate –Source Voltage			V_{GSS}	± 20	V
Continuous Drain Current($T_J=150^\circ C$)	$T_C=25^\circ C$	$T_C=70^\circ C$	I_{DSM}	-58	A
	$T_A=25^\circ C$	$T_A=70^\circ C$		-17	
Pulsed Drain Current ($t=100\mu s$)			I_{DM}	-200	
Continuous Source Current(Diode Conduction)	$T_C=25^\circ C$		I_S	-46	
	$T_A=25^\circ C$			-4.0	
Single Pulse Avalanche Current	$L=0.1mH$		I_{AS}	-30	mJ
			E_{AS}	45	
Power Dissipation	$T_C=25^\circ C$	$T_C=75^\circ C$	P_D	56	W
	$T_A=25^\circ C$	$T_A=75^\circ C$		4.8	
Operating Junction Temperature			T_J	-55/150	$^\circ C$
Storage Temperature Range			T_{STG}		
Thermal Resistance-Junction to Ambient	$t \leq 10 s$		$R_{\theta JA}$	21	$^\circ C/W$
Maximum Junction-to-Case (Drain)	Steady-State		$R_{\theta JA}$	1.8	

➤ Electrical Characteristics ($T_A=25^\circ C$ Unless otherwise noted)

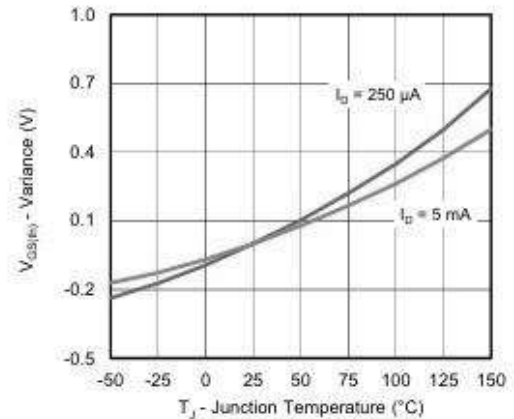
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D = -250\mu A$	-40			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D = -250\mu A$	-1.0		-2.5	V
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS} = \pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -40V, V_{GS}=0V$			-1	μA
		$V_{DS} = -40V, V_{GS}=0V$ $T_J=70^\circ C$			-10	
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -15A$		7.5	8.8	m Ω
		$V_{GS} = -4.5V, I_D = -15A$		10.5	12.5	
Forward Transconductance	g_{FS}	$V_{DS} = -15V, I_D = -15A$		58		S
Diode Forward Voltage	V_{SD}	$I_S = -5A, V_{GS}=0V$		-0.8	-1.2	V
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=-20V, V_{GS}=-4.5V$ $I_D = -15A$		38	58	nC
Gate-Source Charge	Q_{gs}			14		
Gate-Drain Charge	Q_{gd}			12		
Gate Resistance	R_g	$f=1MHz$	0.4	2.2	4.0	Ω
Input Capacitance	C_{iss}	$V_{DS}=-20V, V_{GS}=0V$ $f=1MHz$		5670		pF
Output Capacitance	C_{oss}			345		
Reverse Transfer Capacitance	C_{rss}			330		
Turn-On Time	$t_{d(on)}$	$V_{DD}=-20V, R_L=2\Omega$ $I_D=-10A, V_{GEN}=-10V$ $R_G=1\Omega$		12	25	ns
	t_r			5	10	
Turn-Off Time	$t_{d(off)}$			50	100	
	t_f			10	20	

➤ Typical Characteristics

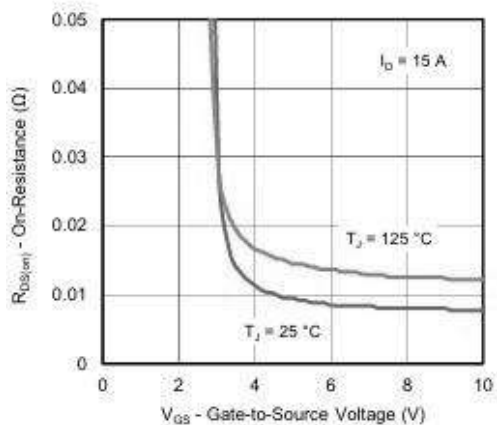




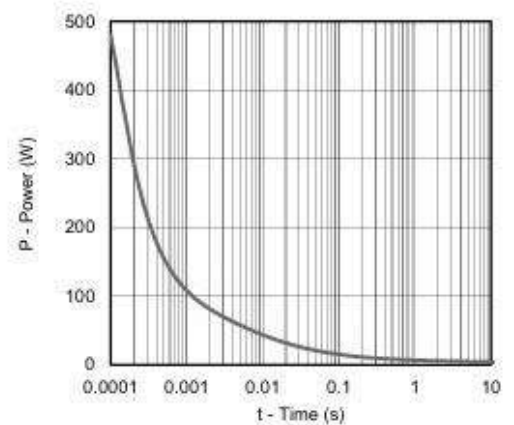
Source-Drain Diode Forward Voltage



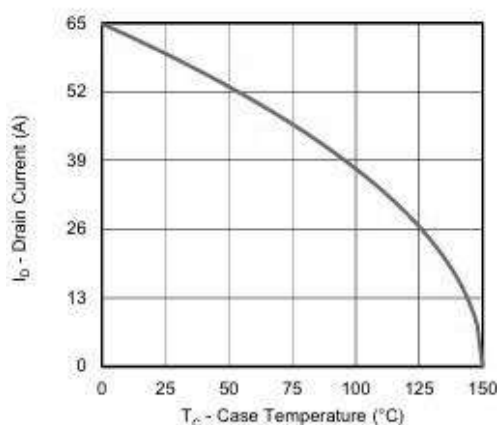
Threshold Voltage



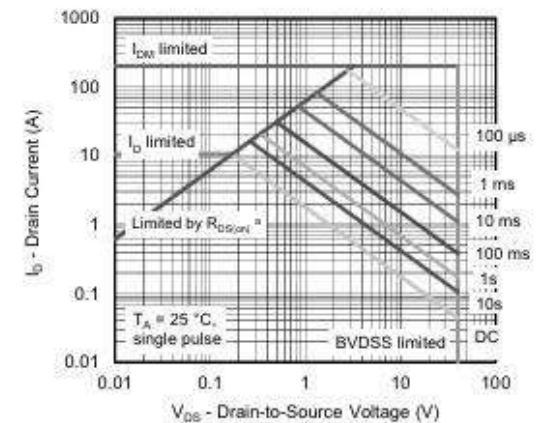
On-Resistance vs. Gate-to-Source Voltage



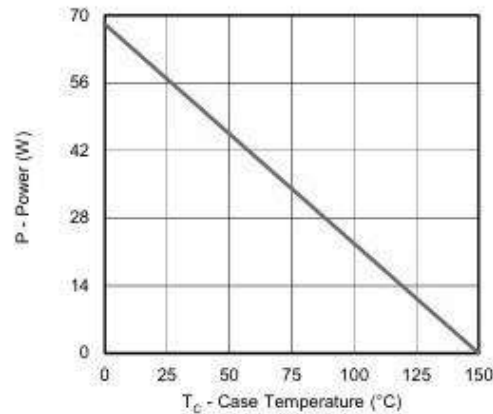
Single Pulse Power, Junction-to-Ambient



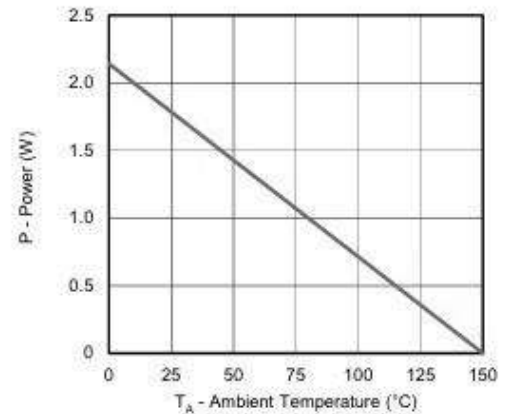
Current Derating ^a



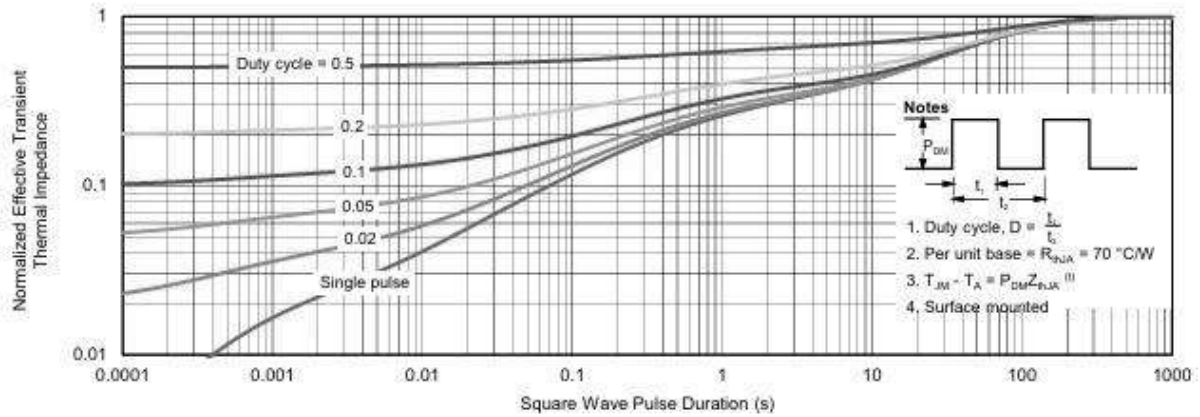
Safe Operating Area, Junction-to-Ambient



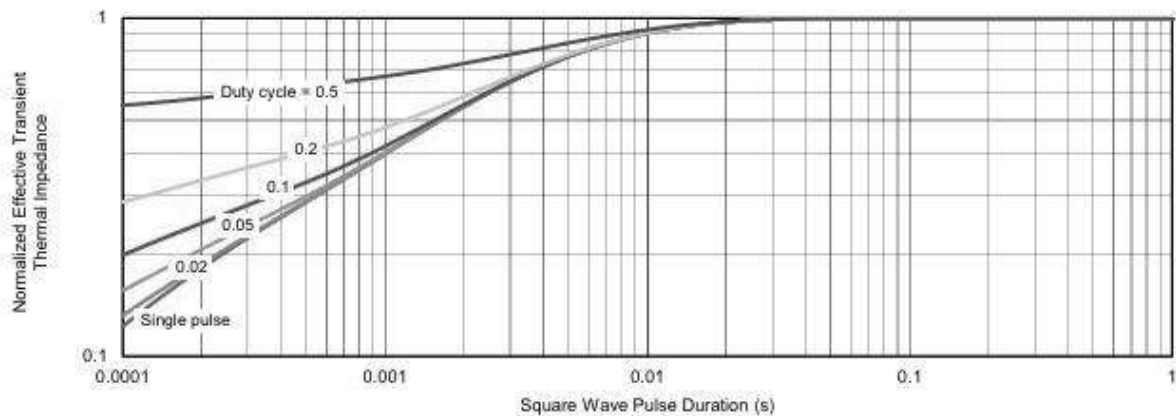
Single Pulse Power, Junction-to-Ambient



Power, Junction-to-Case

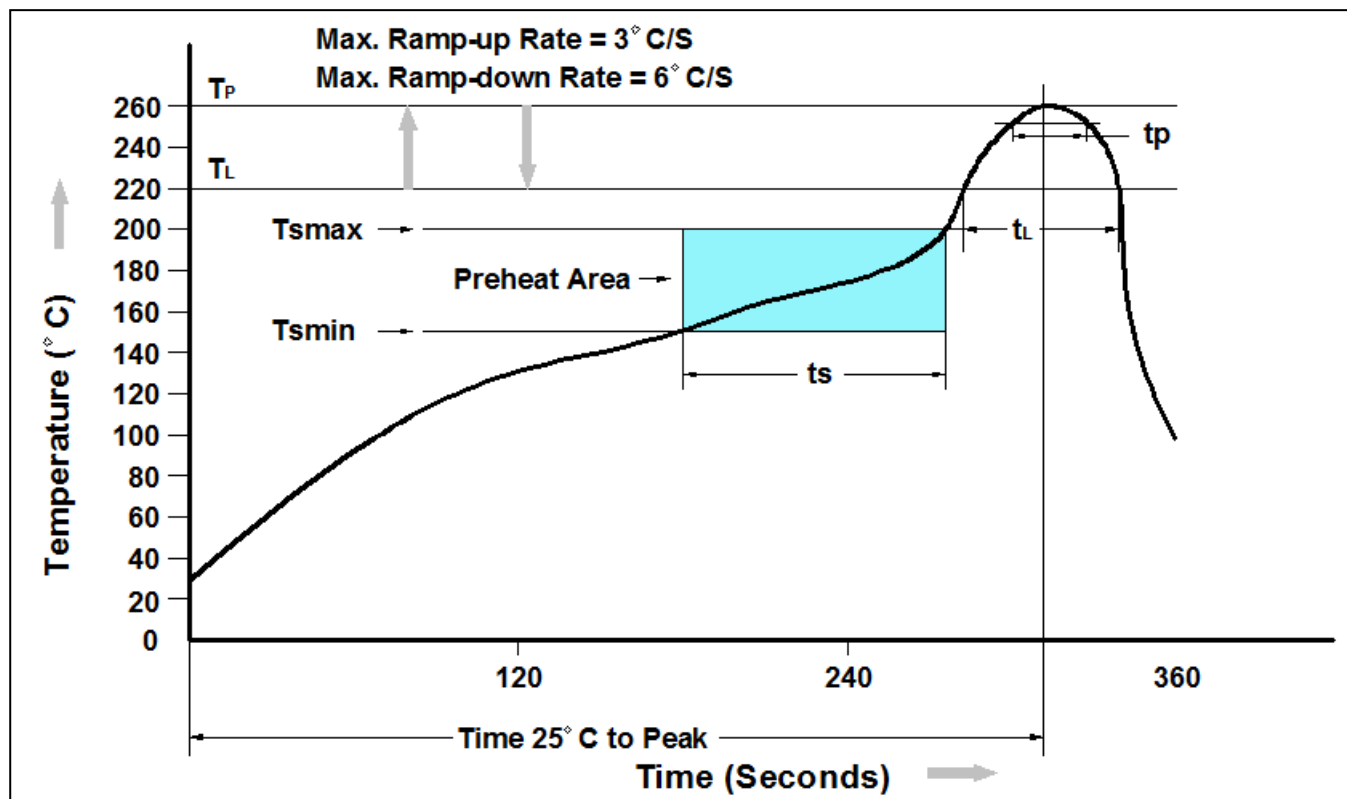


Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Case

➤ Recommend IR Reflow Soldering Thermal Profile

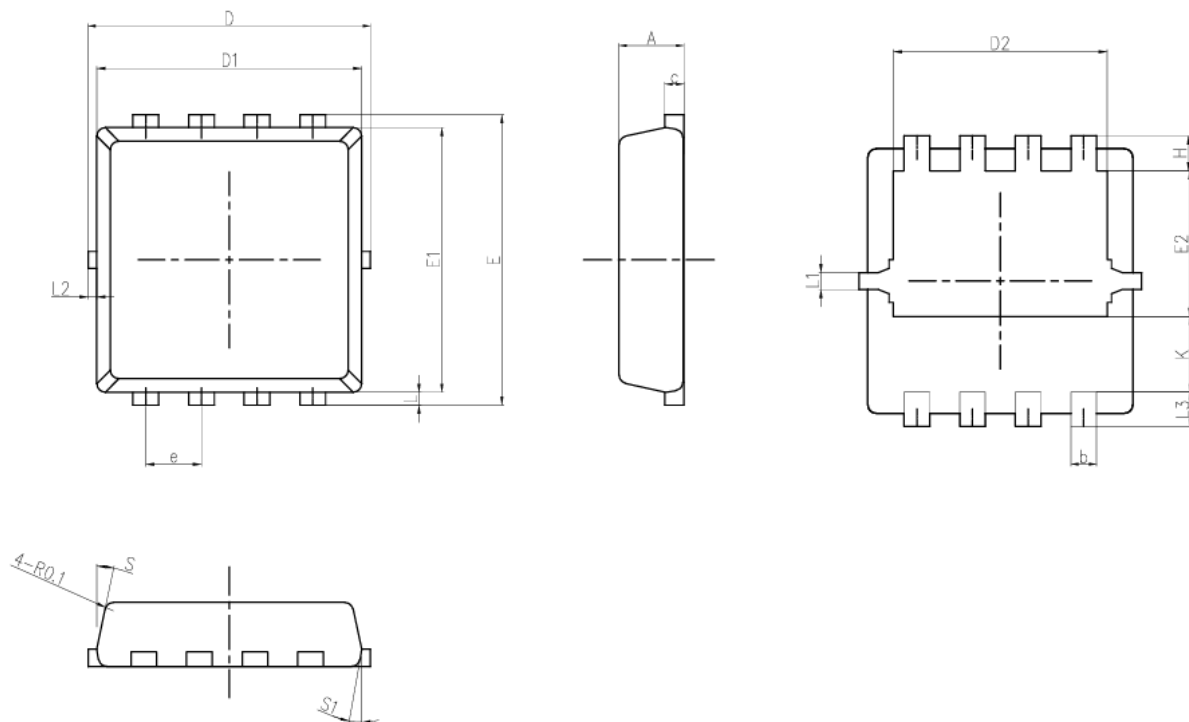


Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T_{smin})	150°C
Temperature Max. (T_{smax})	200°C
Time (t_s) from (T_{smin} to T_{smax})	60-120 seconds
Average Ramp-up Rate (t_L to t_P)	3°C/second max.
Liquidous Temperature (T_L)	217°C
Time (t_L) Maintained Above (T_L)	60 – 150 seconds
Peak Temperature	260°C +0°C / -5°C
Time (t_P) within 5°C of actual Peak Temperature	30 seconds
Ramp-down Rate (T_P to T_L)	6°C/second max
Time 25°C to Peak Temperature	8 minutes max.

➤ Ordering Information

Part Number	Description	Quantity
PAP74TD09CSA	DFN3.3x3.3-8L Reel	5000 pcs

➤ Package Information (DFN3.3X3.3-8L)



COMMON DIMENSIONS (UNIT of MEASURE=MILLIMETER)											
SYMBOL	MIN	NOM	MAX	SYMBOL	MIN	NOM	MAX	SYMBOL	MIN	NOM	MAX
A	0.66	0.76	0.86	e	0.55	0.65	0.75	L	0.06	0.15	0.20
b	0.25	0.30	0.35	E	3.15	3.30	3.45	L1	0.10	0.20	0.30
c	0.19	0.20	0.22	E1	3.00	3.10	3.20	L2	0	0.10	0.15
D	3.05	3.30	3.45	E2	1.60	1.70	1.80	L3	0.30	0.40	0.50
D1	3.00	3.10	3.20	H	0.31	0.41	0.51	S	10°	12°	14°
D2	2.40	2.50	2.60	K	0.79	0.89	0.99	S1	8°	10°	12°

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