

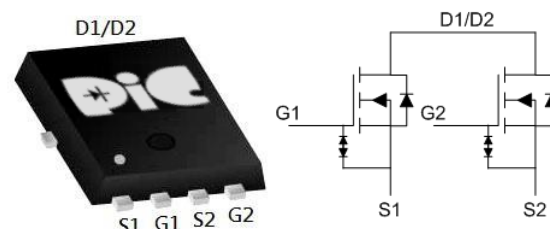
➤ General Description

This PAN27T30EV Dual 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

- Super Low Gate Charge
- 100% EAS Guaranteed
- Green Device Available
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

➤ DFN3X3-NEP



➤ Application

- DC/DC Primary Side Switch
- Industrial Synchronous
- Rectification Load Switch
- ESD Protection

➤ Absolute Maximum Ratings

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current ₁	$I_D @ T_A=25^\circ C$	7	A
Continuous Drain Current ₁	$I_D @ T_A=70^\circ C$	5.8	A
Pulsed Drain Current ₂	I_{DM}	43	A
Total Power Dissipation ₃	$P_D @ T_A=25^\circ C$	1.47	W
Storage Temperature Range	T_{STG}	-55 to 150	$^\circ C$
Operating Junction Temperature Range	T_J	-55 to 150	$^\circ C$
Thermal Resistance Junction-Ambient ₁	$R_{\theta JA}$	85	$^\circ C/W$

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

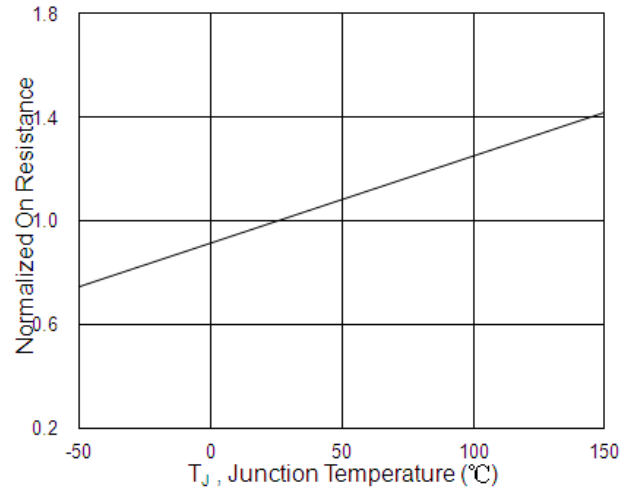
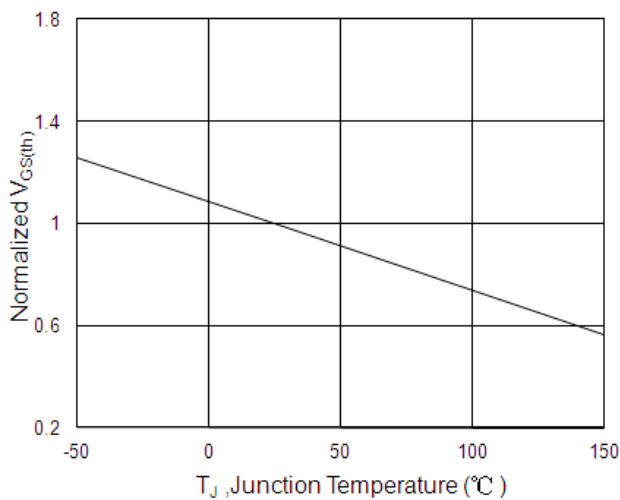
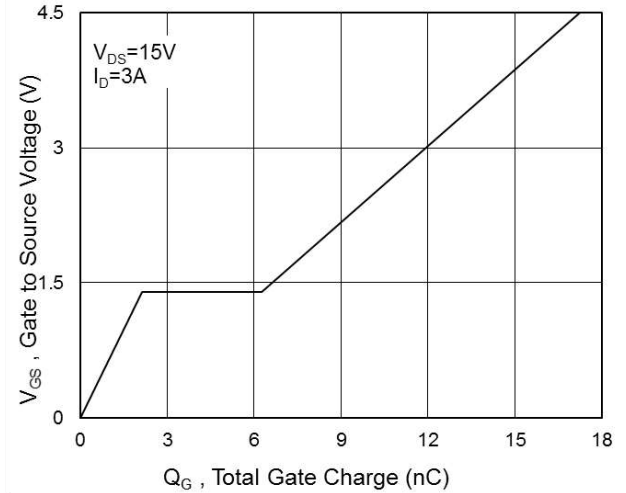
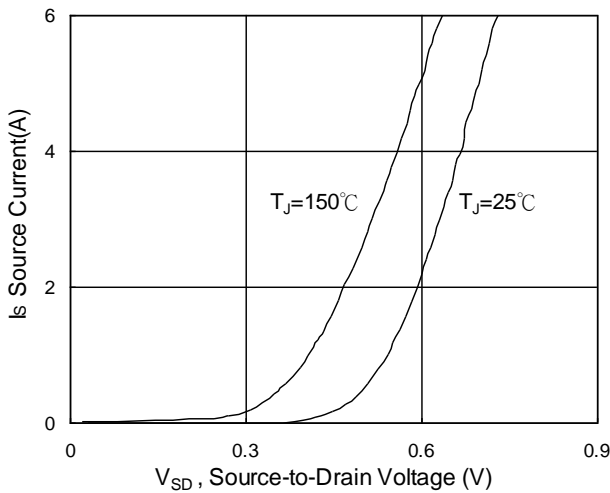
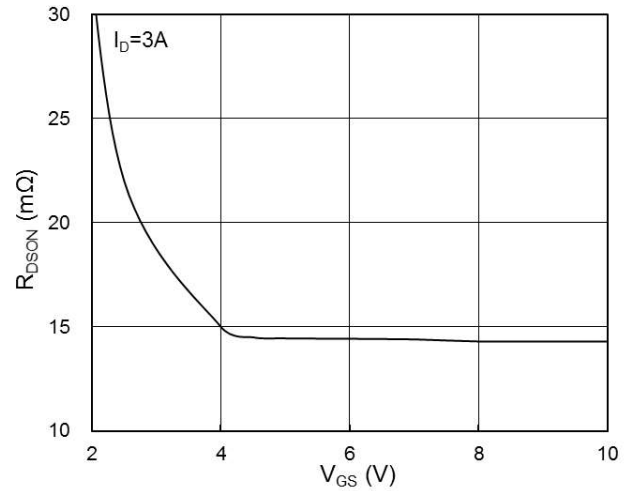
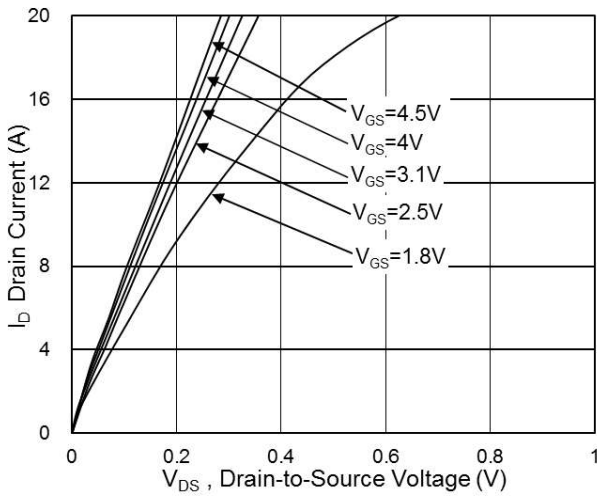
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$, $I_D=250\mu A$	20	---	---	V
BV_{DSS} Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to $25^\circ C$, $I_D=1mA$	---	0.014	---	$V/^\circ C$
Static Drain-Source On-Resistance ²	$R_{DS(ON)}$	$V_{GS}=4.5V$, $I_D=3A$	---	14.5	17	$m\Omega$
		$V_{GS}=4.0V$, $I_D=3A$	---	15	18.5	$m\Omega$
		$V_{GS}=3.1V$, $I_D=3A$	---	18.5	24.5	$m\Omega$
		$V_{GS}=2.5V$, $I_D=3A$	---	22	27	$m\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}$, $I_D=250\mu A$	0.5	---	1.2	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		---	-2.09	---	$mV/^\circ C$
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=16V$, $V_{GS}=0V$, $T_J=25^\circ C$	---	---	25	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 12V$, $V_{DS}=0V$	---	---	± 10	μA
Gate Resistance	R_g	$V_{DS}=0V$, $V_{GS}=0V$, $f=1MHz$	---	1.83	---	Ω
Total Gate Charge (4.5V)	Q_g	$V_{DS}=16V$, $V_{GS}=4.5V$, $I_D=3A$	---	9.86	---	nC
Gate-Source Charge	Q_{gs}		---	1.41	---	
Gate-Drain Charge	Q_{gd}		---	2.48	---	
Turn-On Delay Time	$T_{d(on)}$	$V_{DD}=10V$, $V_{GS}=4.5V$, $R_G=3.3\Omega$, $I_D=3A$	---	7	---	ns
Rise Time	T_r		---	36	---	
Turn-Off Delay Time	$T_{d(off)}$		---	46.5	---	
Fall Time	T_f		---	15	---	
Input Capacitance	C_{iss}	$V_{DS}=15V$, $V_{GS}=0V$, $F=1MHz$	---	735	---	pF
Output Capacitance	C_{oss}		---	83	---	
Reverse Transfer Capacitance	C_{rss}		---	81	---	

➤ Diode Characteristics

Parameter	Symbol	Conditions	Max.	Unit
Continuous Source Current ^{1,6}	I_S	$V_G=V_D=0V$, Force Current	7	A
Diode Forward Voltage ²	V_{SD}	$V_{GS}=0V$, $I_S=7A$, $T_J=25^\circ C$	1.2	V

Note :

- 1.Pulse width limited by maximum junction temperature.
- 2.The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3.Ensure that the channel temperature does not exceed $150^\circ C$.
- 4.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.



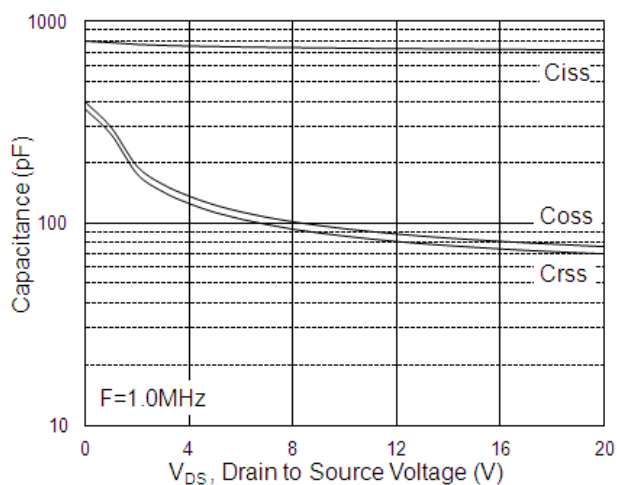


Fig.7 Capacitance

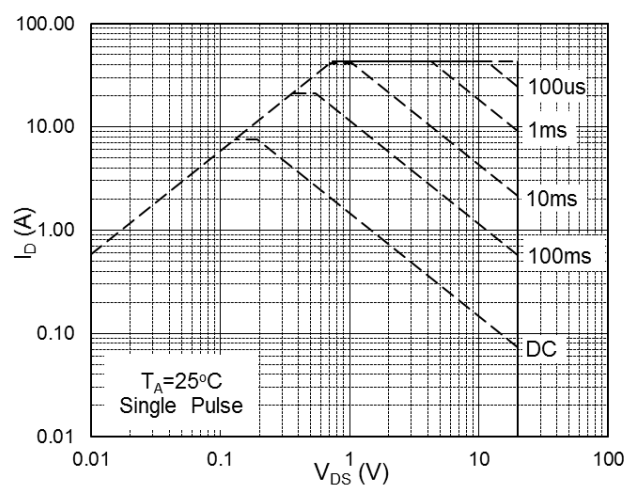


Fig.8 Safe Operating Area

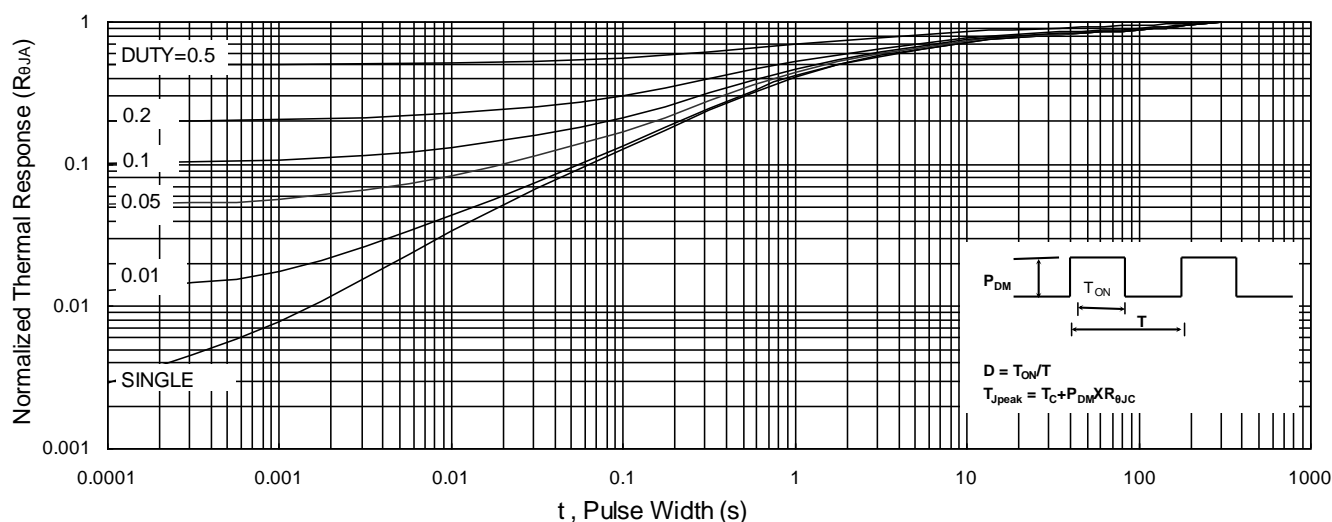


Fig.9 Normalized Maximum Transient Thermal Impedance

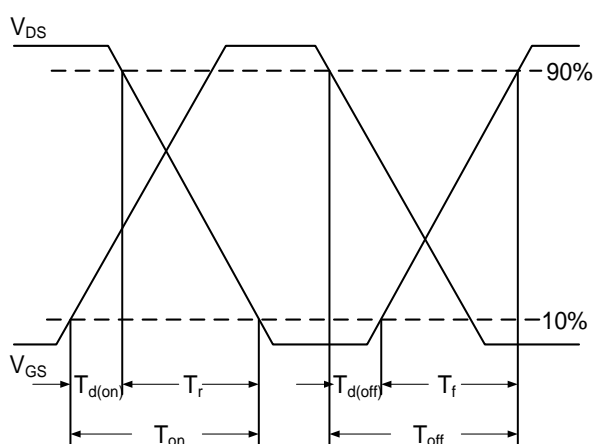


Fig.10 Switching Time Waveform

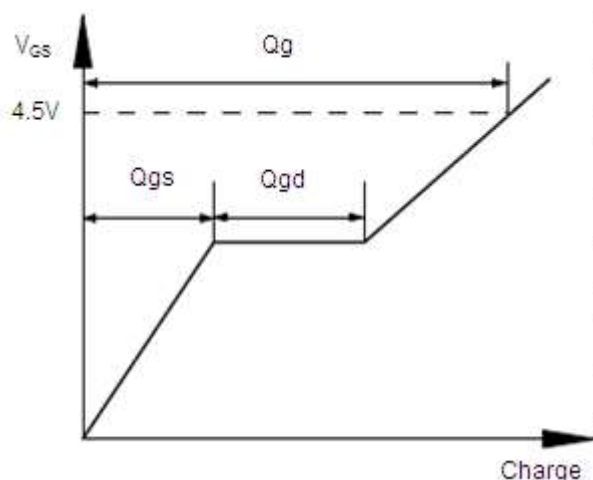
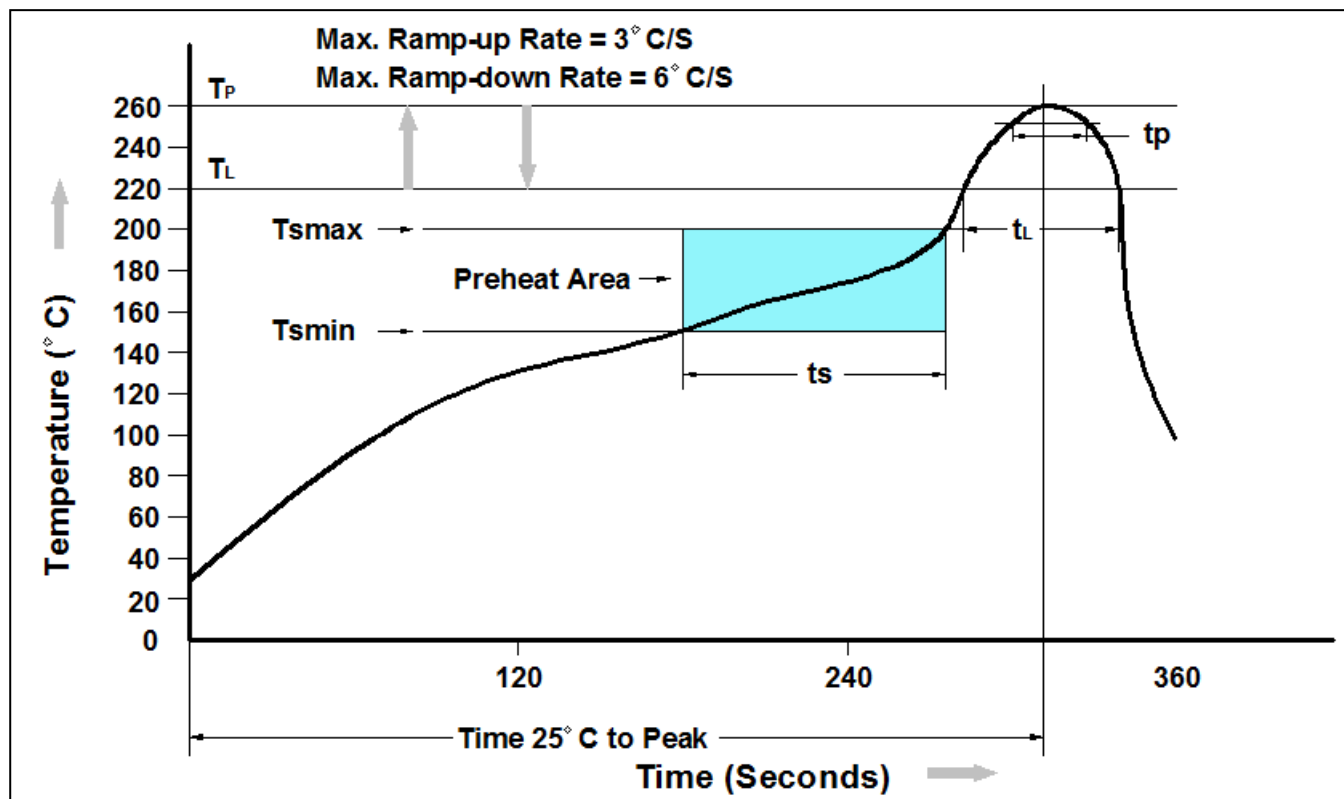


Fig.11 Gate Charge Waveform

➤ Recommend IR Reflow Soldering Thermal Profile

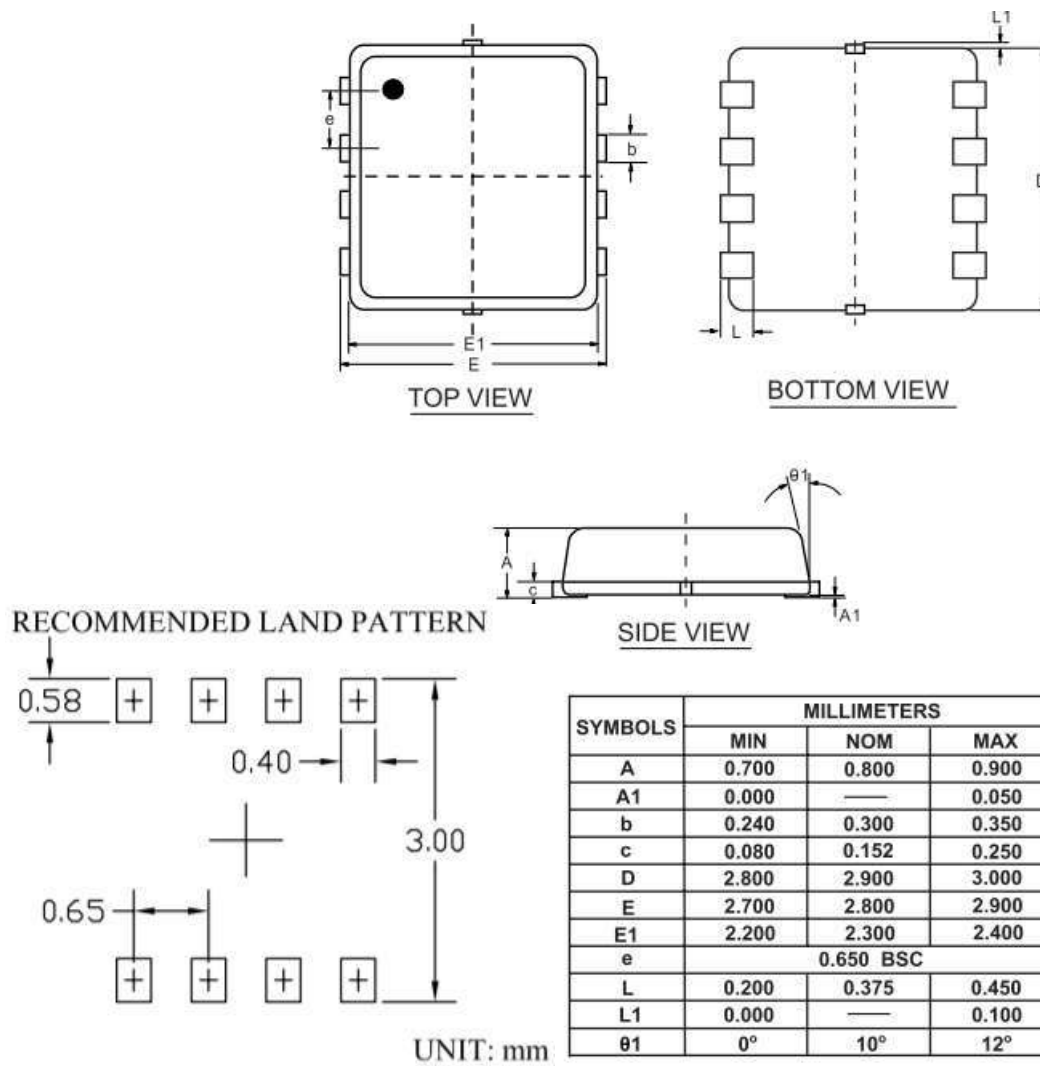


Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T_{smin})	150°C
Temperature Max. (T_{smax})	200°C
Time (t_s) from (T_{smin} to T_{smax})	60-120 seconds
Average Ramp-up Rate (t_L to t_P)	3°C/second max.
Liquidous Temperature (T_L)	217°C
Time (t_L) Maintained Above (T_L)	60 – 150 seconds
Peak 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
PAN27T30EV	DFN3X3-NEP Reel	3000 pcs

➤ Package Information (DFN3X3-NEP)



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