

➤ General Description

This PAN66TY04CSY 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.

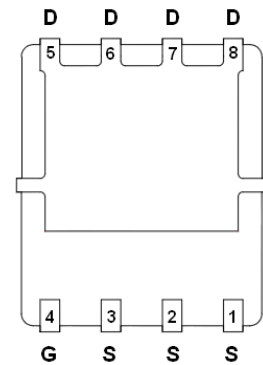
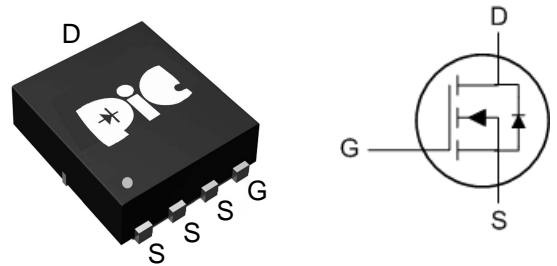
➤ Feature

- Super Low Gate Charge
- 100% EAS Guaranteed
- Green Device Available
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology
- DFN5x6B-EP1 package design

➤ Application

- DC/DC Primary Side Switch
- Industrial Synchronous
- Rectification Load Switch
- DC/DC Converters

➤ DFN5X6B-EP1



➤ Absolute Maximum Ratings

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V_{DSS}	60	V
Gate –Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current($T_J=150^\circ C$)	I_{DSM}	$T_C=25^\circ C$	100
		$T_C=70^\circ C$	80
Pulsed Drain Current ($t=100\mu s$)	I_{DM}	$T_A=25^\circ C$	25
		$T_A=70^\circ C$	20
Continuous Source Current(Diode Conduction)	I_S	350	A
Single Pulse Avalanche Current ($V_{DS}=30V / V_{GS}=10V$)	I_{AS}	$T_C=25^\circ C$	40
		$T_A=25^\circ C$	3.8
Power Dissipation	P_D	$L=0.1mH$	48
			115
Operating Junction Temperature	T_J	$T_C=25^\circ C$	60
		$T_C=75^\circ C$	36
Storage Temperature Range	T_{STG}	$T_A=25^\circ C$	4.2
		$T_A=75^\circ C$	2.8
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	-55/150	$^\circ C$
Maximum Junction-to-Case (Drain)	$R_{\theta JA}$	24	$^\circ C/W$
		1.6	

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

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60	69		V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.7	2.5	
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=48V, V_{GS}=0V$			1	uA
		$V_{DS}=48V, V_{GS}=0V$ $T_J=85^\circ C$			10	
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		2.8	3.2	m Ω
		$V_{GS}=4.5V, I_D=15A$		3.8	4.2	
Forward Transconductance	g_{FS}	$V_{DS}=15, I_D=20A$		17		S
Diode Forward Voltage	V_{SD}	$I_S=10A, V_{GS}=0V$		0.7	1.2	V
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=30V, V_{GS}=10V$ $I_D=20A$		40	80	nC
Gate-Source Charge	Q_{gs}			6.5		
Gate-Drain Charge	Q_{gd}			9.0		
Gate Resistance	R_g	$f=1MHz$	1.0	2.0	3.0	Ω
Input Capacitance	C_{iss}	$V_{DS}=30V, V_{GS}=0V$ $f=1MHz$		2535		pF
Output Capacitance	C_{oss}			1135		
Reverse Transfer Capacitance	C_{rss}			55		
Turn-On Time	$t_{d(on)}$	$V_{DD}=30V, R_L=3\Omega$ $I_D=20A, V_{GEN}=10V$ $R_G=3\Omega$		5	10	ns
	t_r			5	10	
Turn-Off Time	$t_{d(off)}$			30	60	
	t_f			15	30	

➤ Typical Characteristics

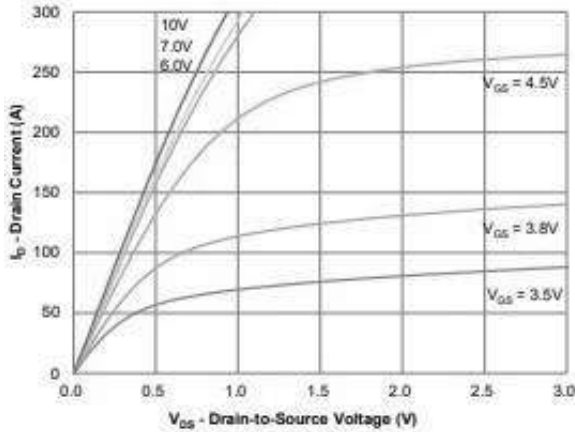


Figure 1: Output Characteristics

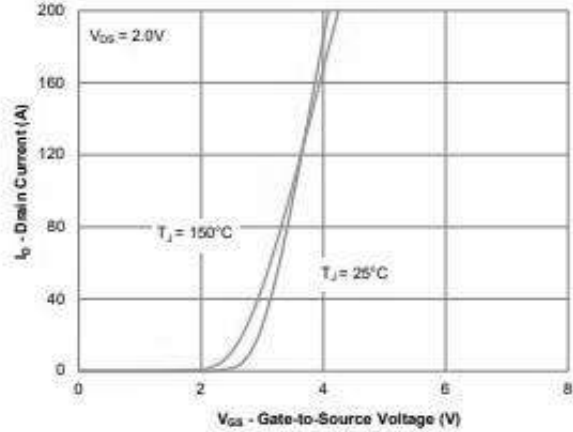


Figure 2: Transfer Characteristics

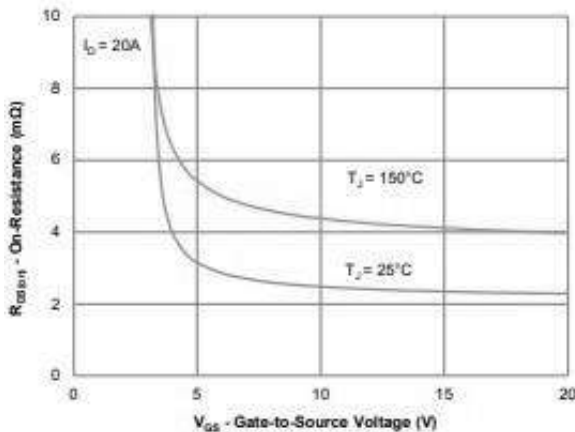


Figure 3: On-Resistance vs. Gate-Source Voltage

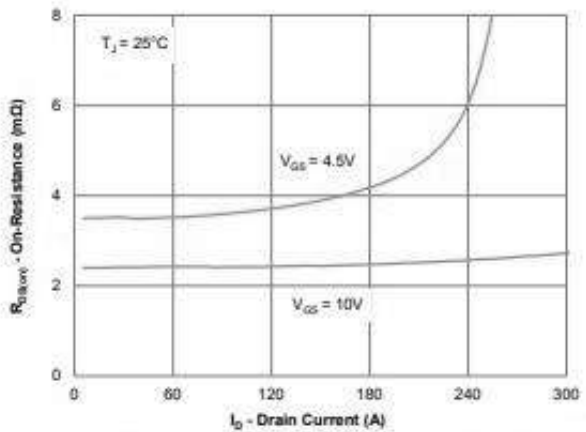


Figure 4: On-Resistance vs. Drain Current and Gate Voltage

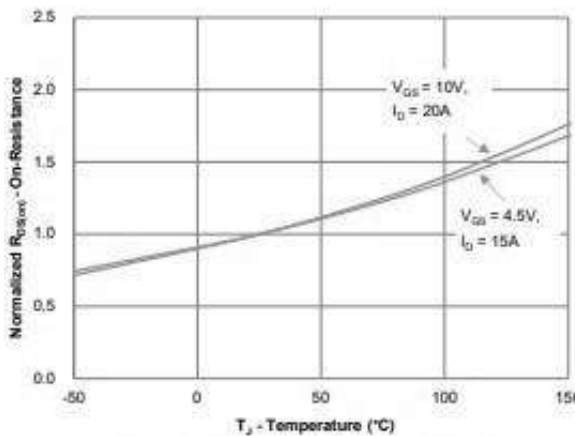


Figure 5: On-Resistance vs. Junction Temperature

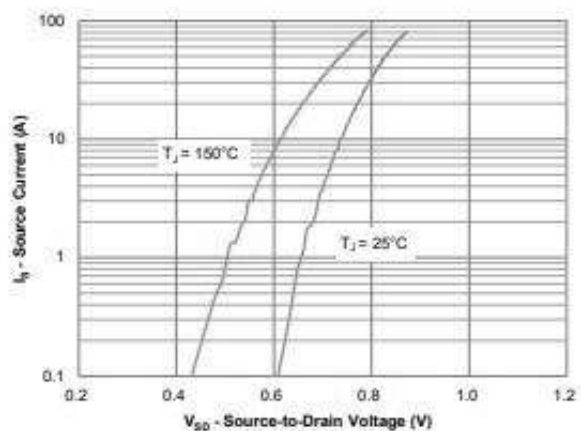


Figure 6: Source-Drain Diode Forward Voltage

➤ Typical Characteristics

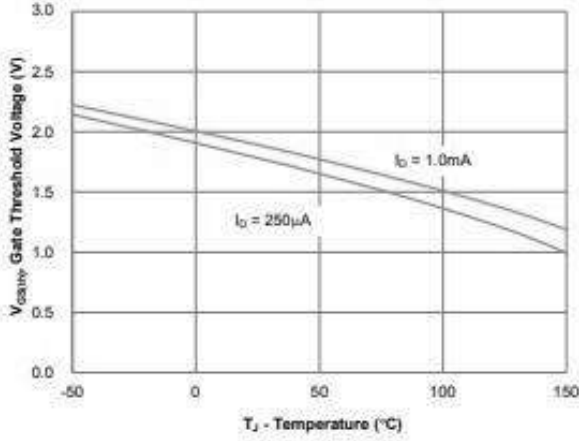


Figure 7: Gate Threshold Variation vs. Junction Temperature

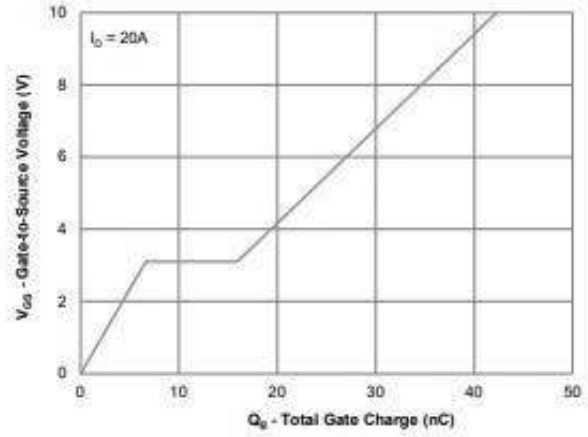


Figure 8: Gate Charge Characteristics

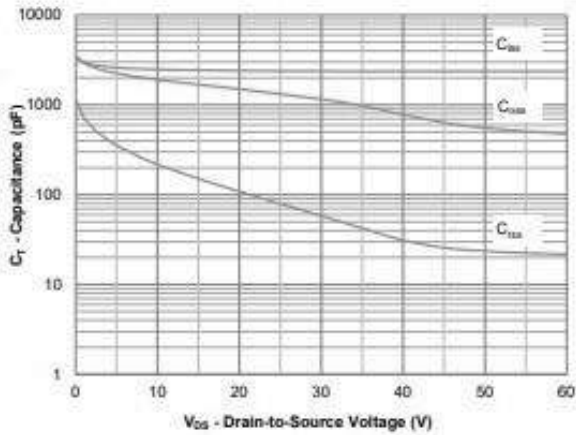


Figure 9: Capacitance Characteristics

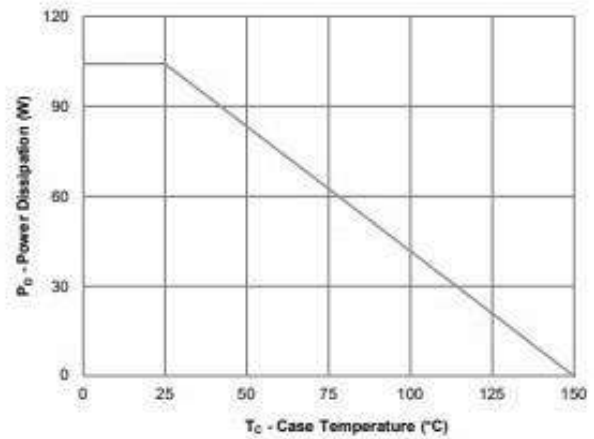


Figure 10: Power Derating

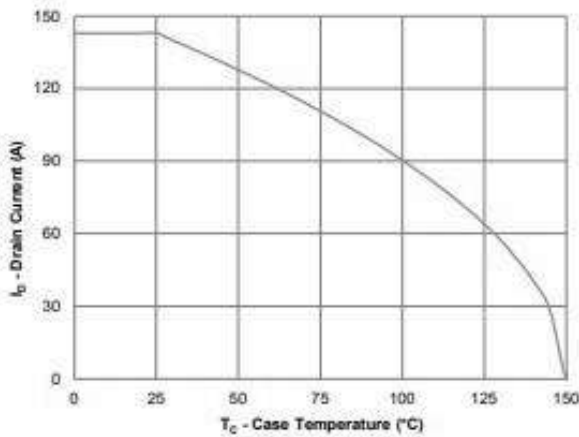


Figure 11: Current Derating

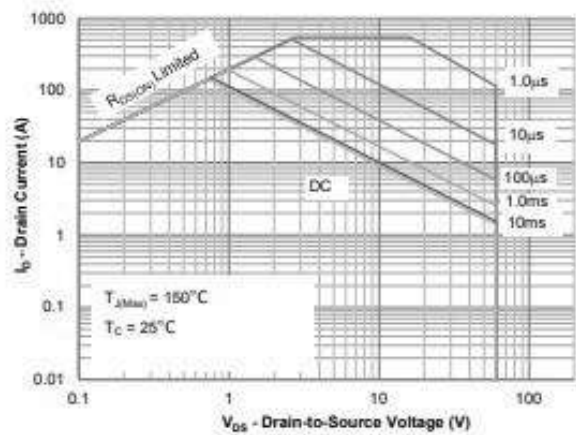
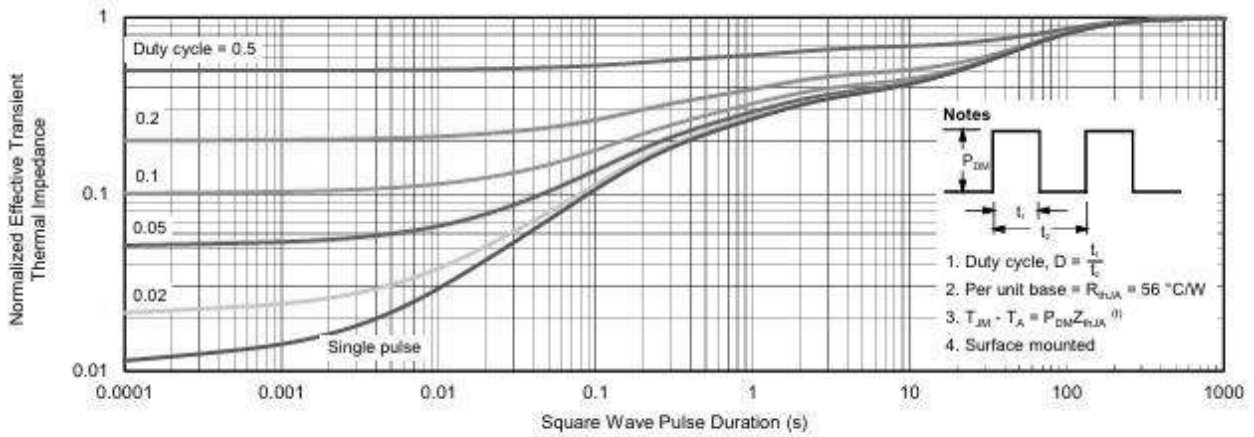
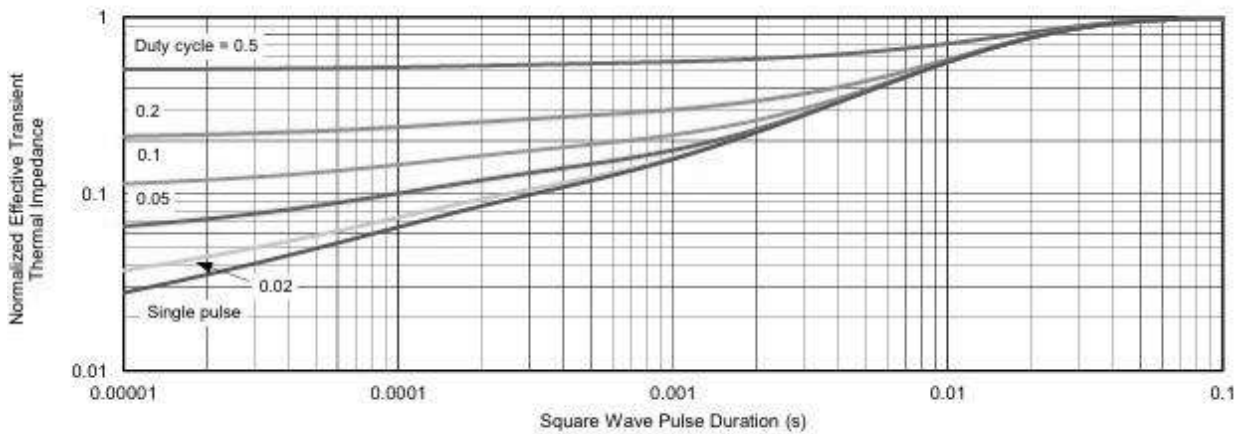


Figure 12: Safe Operating Area

➤ Typical Characteristics

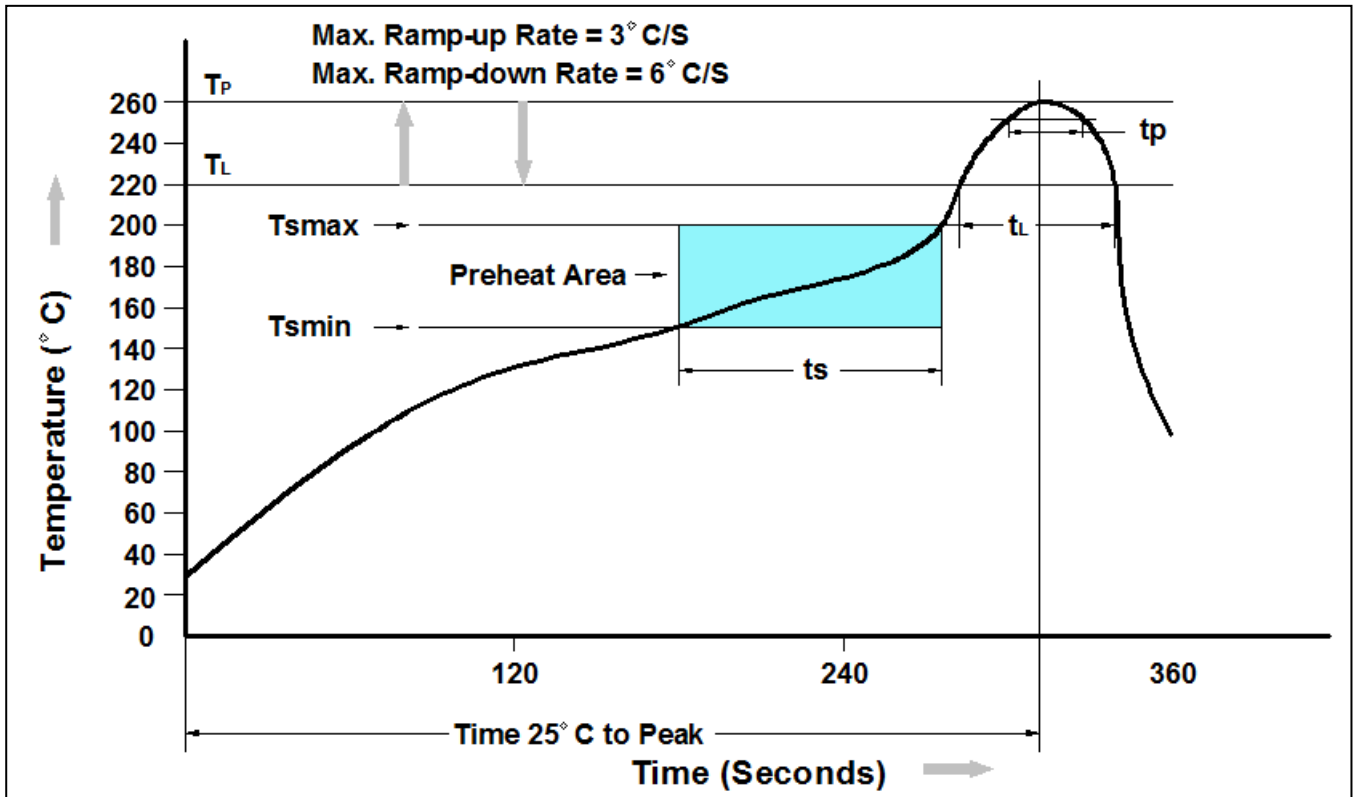


Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Case

➤ Recommend IR Reflow Soldering Thermal Profile

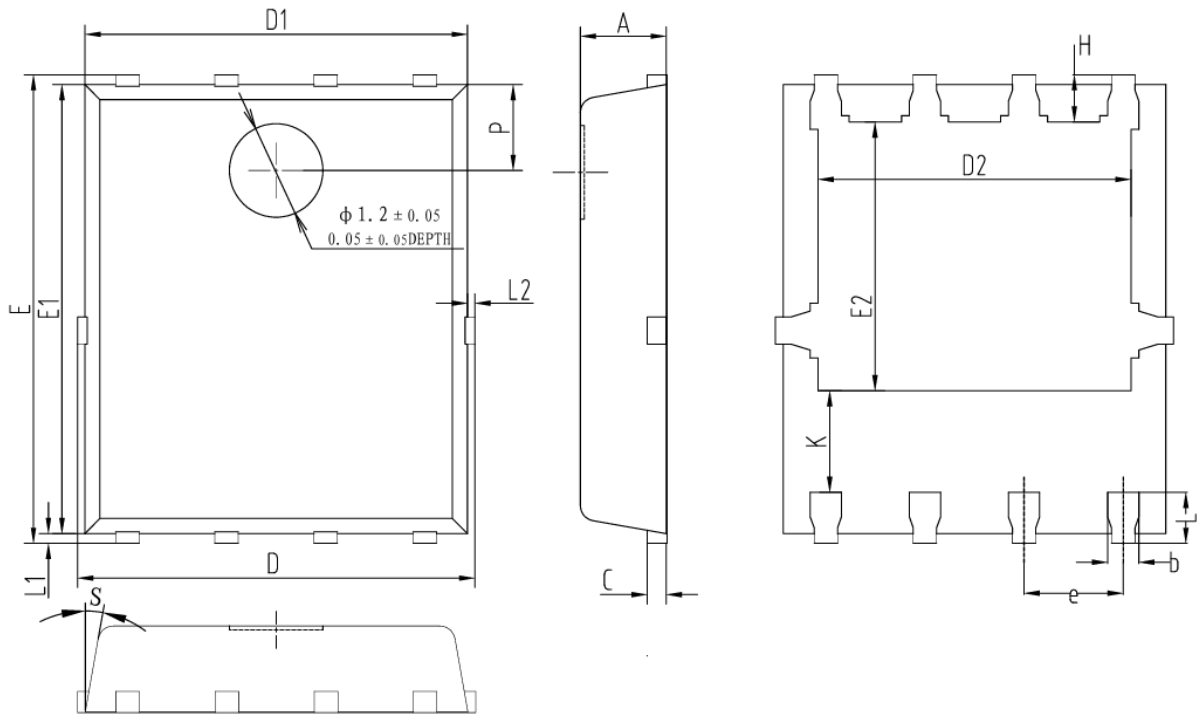


Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T _{smin})	150°C
Temperature Max. (T _{smax})	200°C
Time (t _s) from (T _{smin} to T _{smax})	60-120 seconds
Average Ramp-up Rate (t _L to t _P)	3°C/second max.
Liquidous Temperature (T _L)	217°C
Time (t _L) Maintained Above (T _L)	60 – 150 seconds
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
PAN66TY04CSY	DFN5X6B-EP1 Reel	2500 pcs

➤ Package Information (DFN5X6B-EP1)



COMMON DIMENSIONS (UNIT of MEASURE=MILLIMETER)											
SYMBOL	MIN	NOM	MAX	SYMBOL	MIN	NOM	MAX	SYMBOL	MIN	NOM	MAX
A	1.00	1.10	1.20	e	1.17	1.27	1.37	L	0.55	0.65	0.75
b	0.35	0.40	0.45	E	5.90	6.00	6.10	L1	0	0.10	0.20
c	0.19	0.25	0.30	E1	5.70	5.75	5.80	L2	0	0.10	0.20
D	4.80	5.10	5.20	E2	3.35	3.45	3.55	P	1.00	1.10	1.20
D1	4.80	4.90	5.00	H	0.50	0.60	0.70	S	8°	10°	12°
D2	3.90	4.00	4.10	K	1.20	1.30	1.40				

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