

General Description

This PAN68TY70CSY 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.

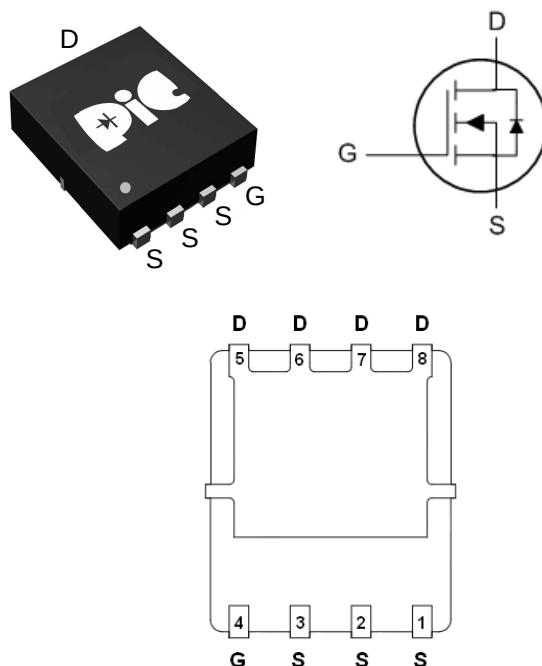
Feature

- 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



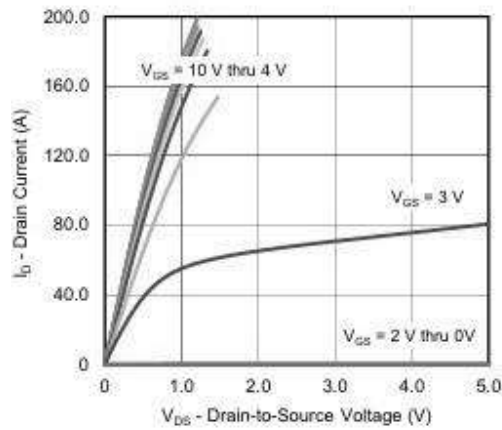
Absolute Maximum Ratings

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V_{DSS}	100	V
Gate –Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current($T_J=150^{\circ}C$)	I_{DSM}	80	A
		64	
	I_{DM}	24	
		18	
Pulsed Drain Current ($t=100\mu s$)	I_{DM}	200	A
Continuous Source Current(Diode Conduction)	I_S	94	
		4.9	
Single Pulse Avalanche Current	I_{AS}	40	mJ
	E_{AS}	80	
Power Dissipation	P_D	100	W
		5.4	
Operating Junction Temperature	T_J	-55/150	$^{\circ}C$
Storage Temperature Range	T_{STG}		$^{\circ}C$
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	18	$^{\circ}C/W$
Maximum Junction-to-Case (Drain)	$R_{\theta JA}$	1.0	

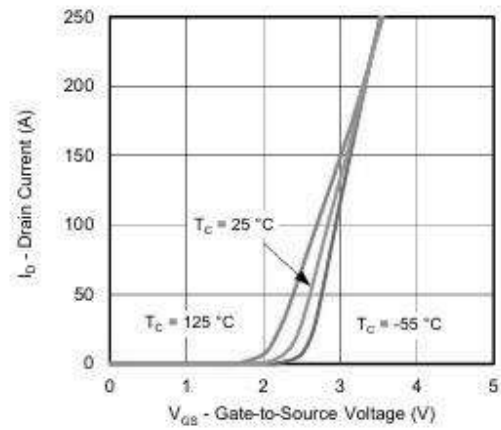
➤ Electrical Characteristics ($T_J=25^\circ C$ Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100			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}	$V_{DS}=80V, V_{GS}=0V$			1	uA
		$V_{DS}=80V, V_{GS}=0V$ $T_J=85^\circ C$			10	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 10V, V_{GS}=10V$	40			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		4.8	5.8	m Ω
		$V_{GS}=4.5V, I_D=15A$		6.2	7.2	
Forward Transconductance	g_{FS}	$V_{DS}=15V, I_D=15A$		75		S
Diode Forward Voltage	V_{SD}	$I_S=5A, V_{GS}=0V$		0.75	1.2	V
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=50V, V_{GS}=4.5V$ $I_D \equiv 15A$		32	65	nC
Gate-Source Charge	Q_{gs}			14		
Gate-Drain Charge	Q_{gd}			6.5		
Gate Resistance	R_g	$f=1MHz$	0.4	1.0	1.8	Ω
Input Capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V$ $f=1MHz$		4850		pF
Output Capacitance	C_{oss}			325		
Reverse Transfer Capacitance	C_{rss}			18		
Turn-On Time	$t_{d(on)}$	$V_{DD}=50V, R_L=3.33\Omega$ $I_D \equiv 15A, V_{GEN}=10V$ $R_G=1\Omega$		15	30	ns
	t_r			20	40	
Turn-Off Time	$t_{d(off)}$			40	80	
	t_f			10	20	

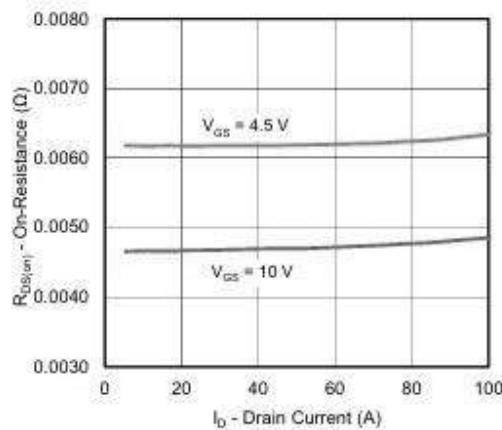
➤ Typical Characteristics



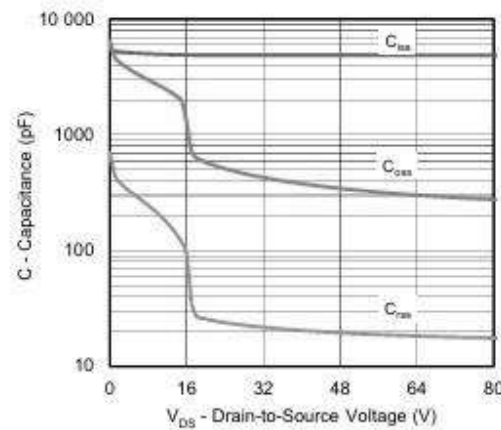
Output Characteristics



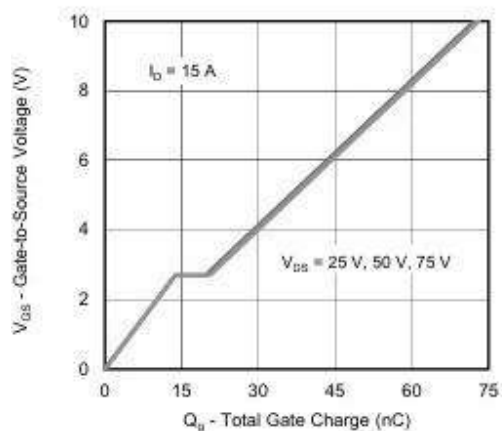
Transfer Characteristics



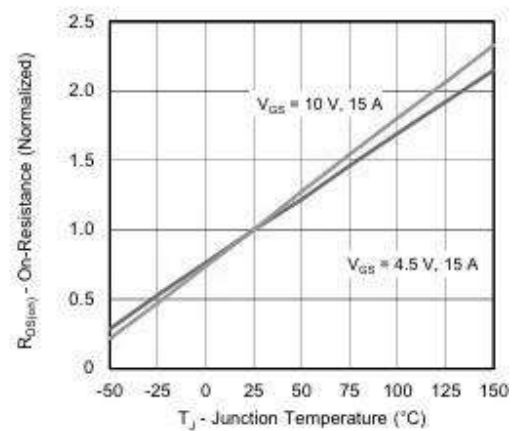
On-Resistance vs. Drain Current and Gate Voltage



Capacitance

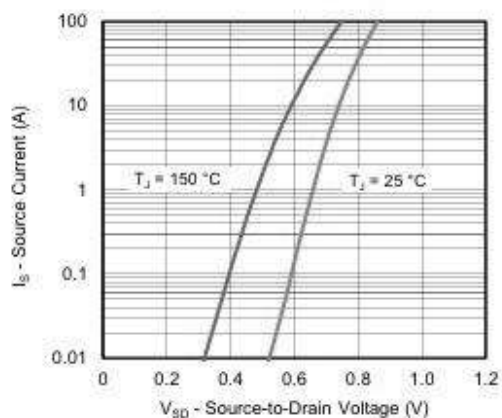


Gate Charge

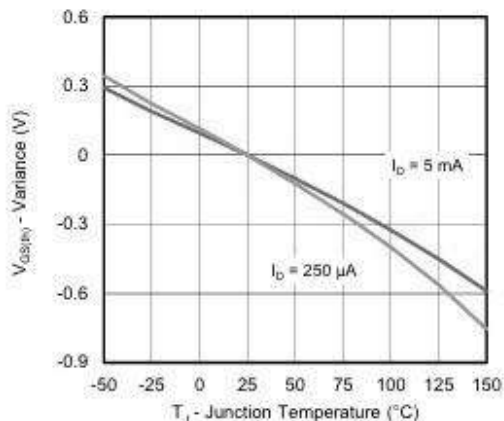


On-Resistance vs. Junction Temperature

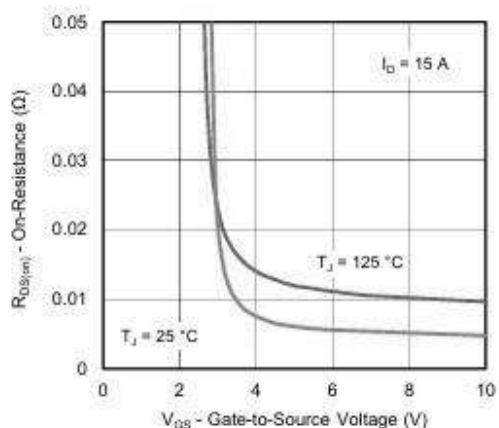
➤ Typical Characteristics



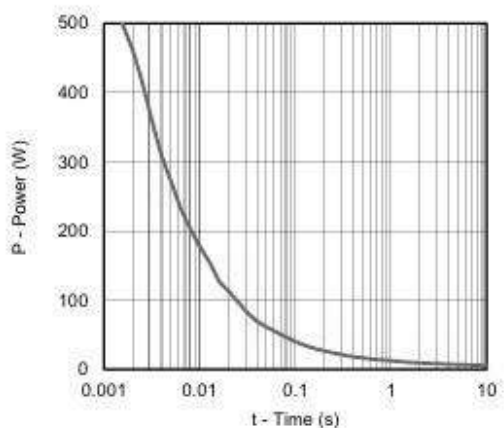
Source-Drain Diode Forward Voltage



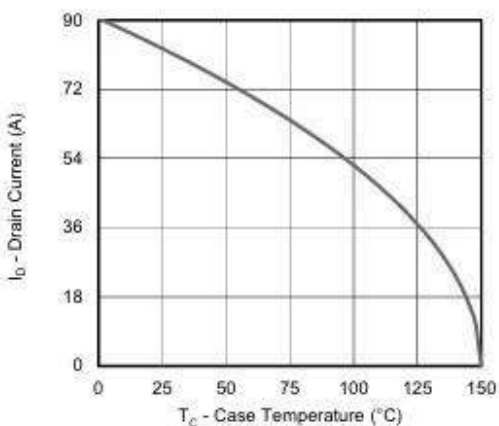
Threshold Voltage



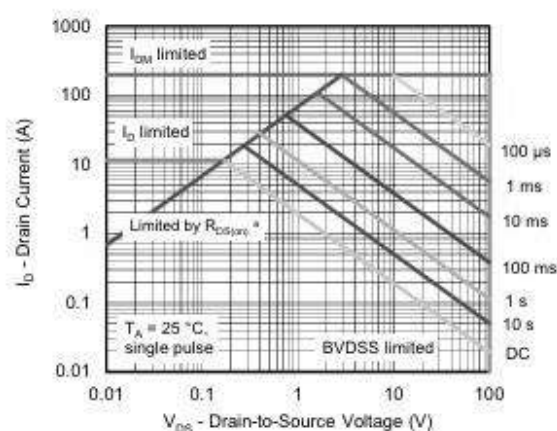
On-Resistance vs. Gate-to-Source Voltage



Single Pulse Power, Junction-to-Ambient

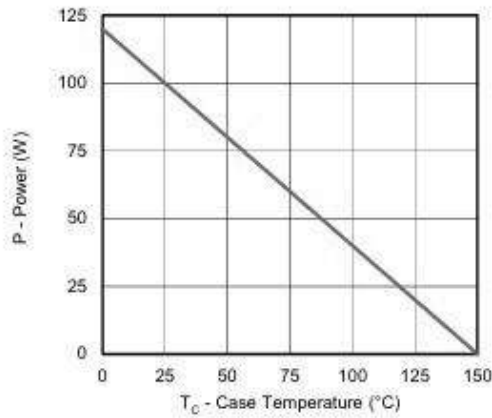


Current Derating ^a

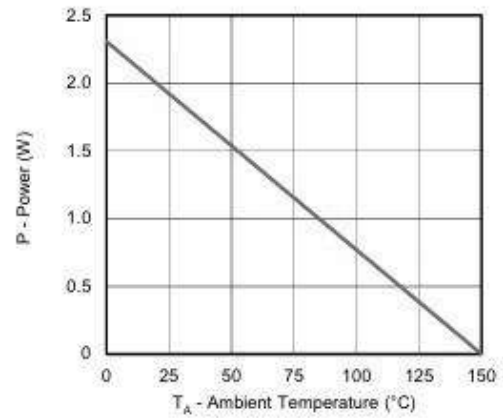


Safe Operating Area, Junction-to-Ambient

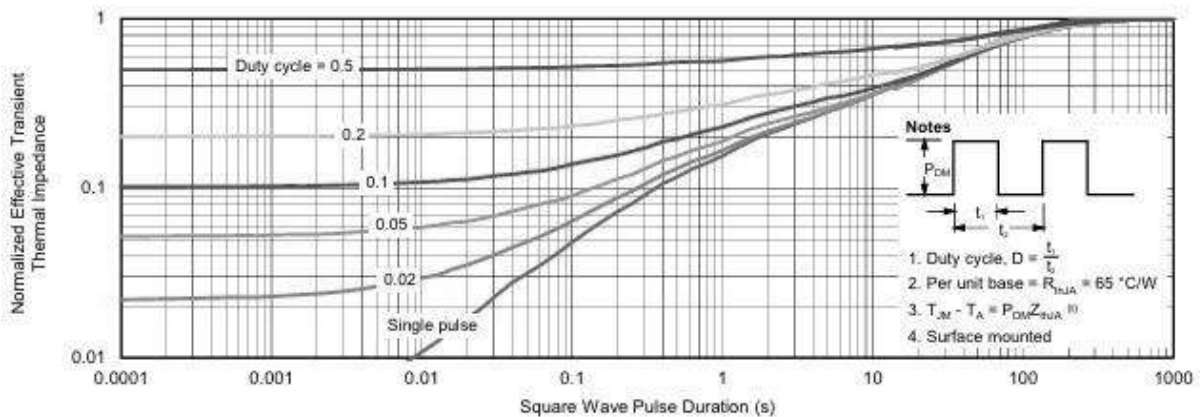
➤ Typical Characteristics



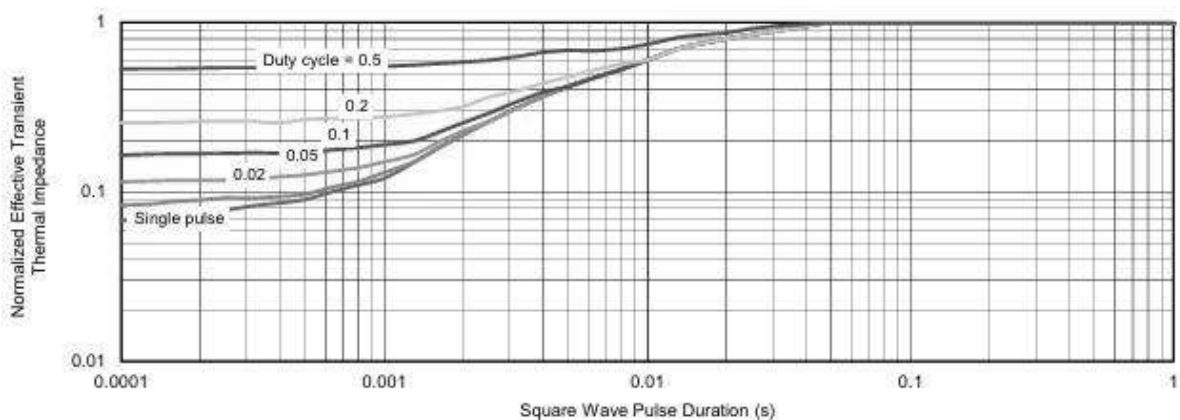
Power, Junction-to-Case



Power, Junction-to-Ambient

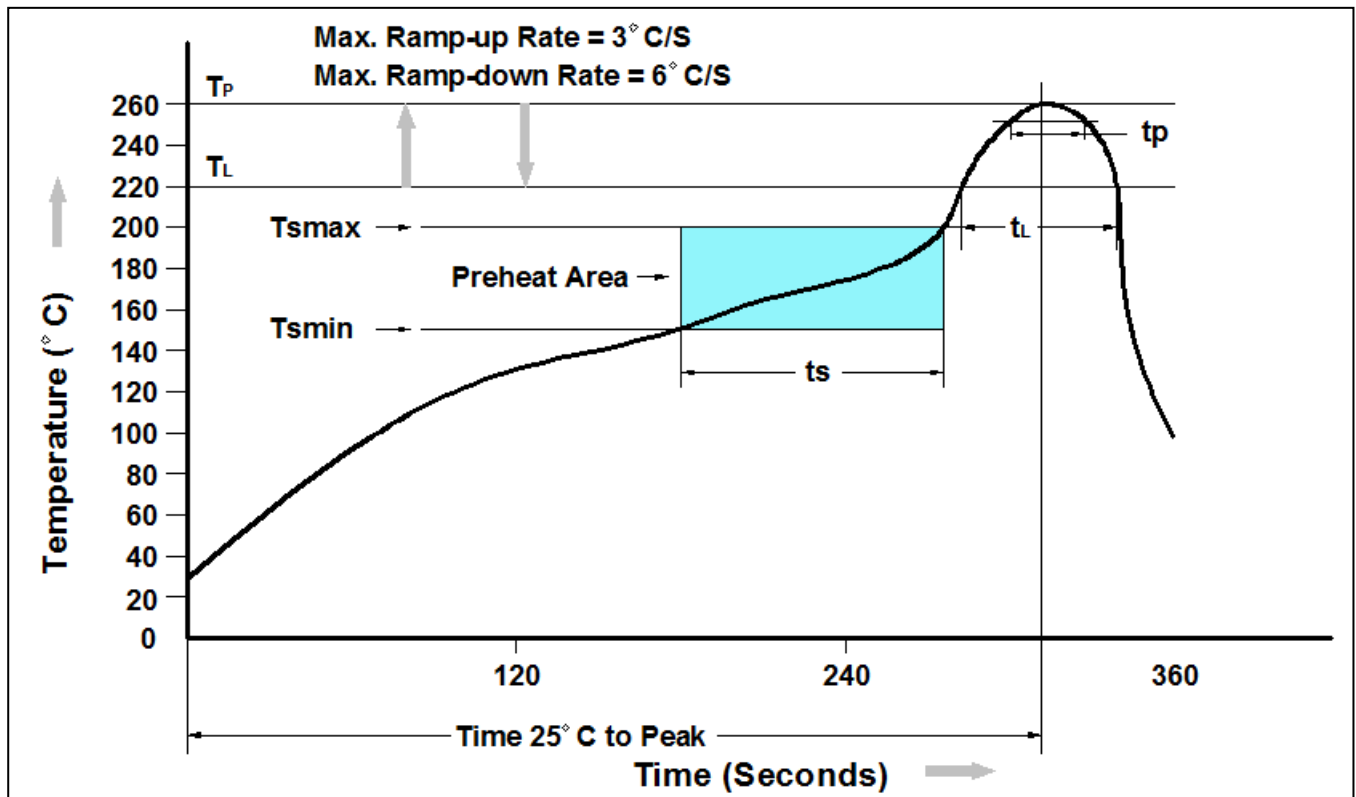


Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Case

➤ Recommend IR Reflow Soldering Thermal Profile

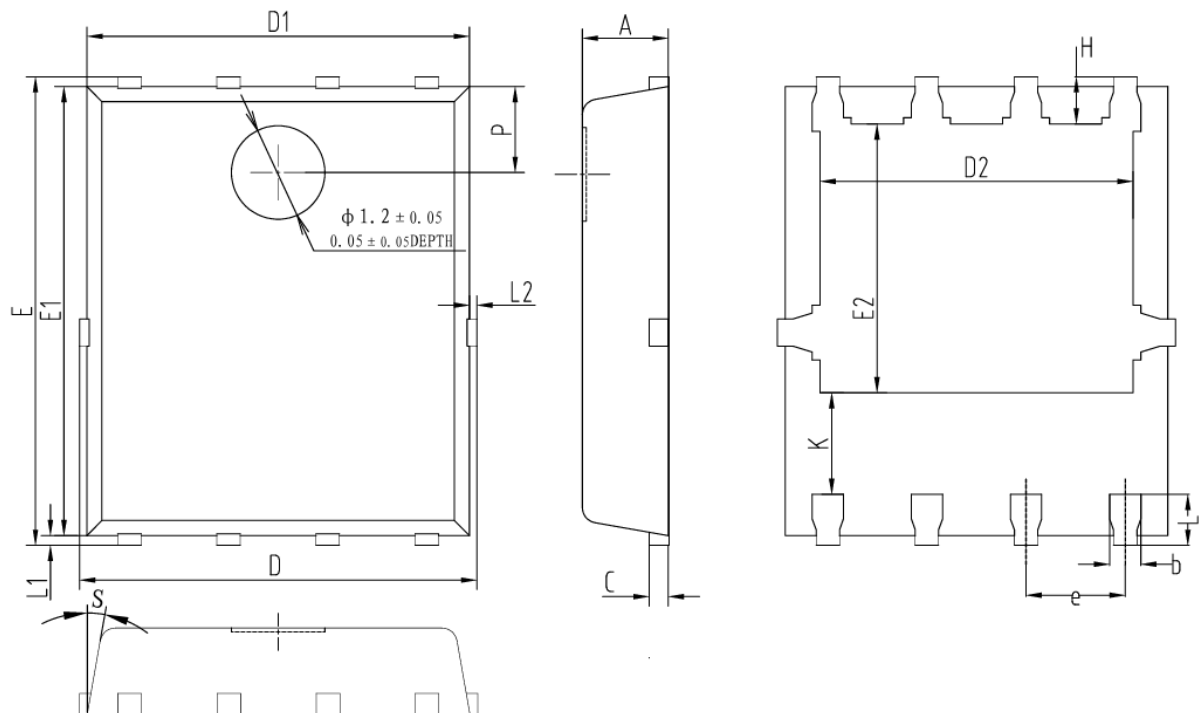


Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T _{smin})	150°C
Temperature Max. (T _{smax})	200°C
Time (t _s) from (T _{smin} to T _{smax})	60-120 seconds
Average Ramp-up Rate (t _L to t _P)	3°C/second max.
Liquidous Temperature (T _L)	217°C
Time (t _L) Maintained Above (T _L)	60 – 150 seconds
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
PAN68TY70CSY	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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