

➤ General Description

This PAN63TY12CSY 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.

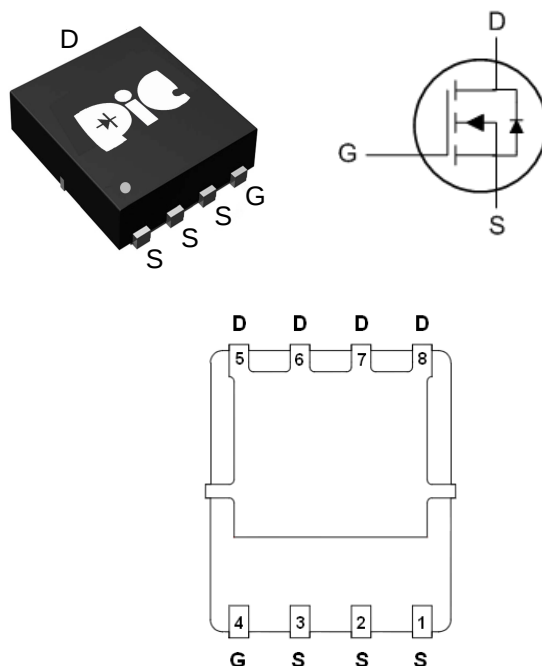
➤ Feature

- 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

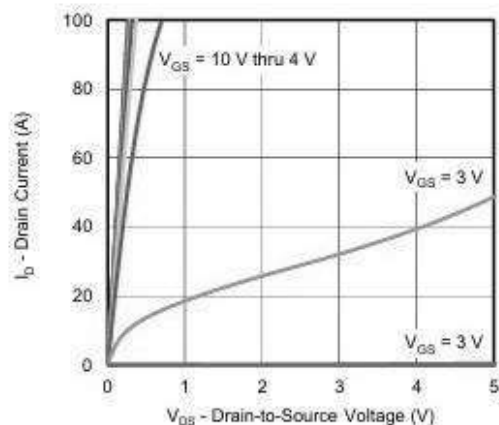
Parameter			Symbol	Typical		Unit
Drain-Source Voltage			V _{DSS}	30		V
Gate –Source Voltage			V _{GSS}	±20		V
Continuous Drain Current(T _J =150°C)	T _C =25°C	T _C =70°C	I _{DSM}	80	65	A
	T _A =25°C	T _A =70°C		28	24	
Pulsed Drain Current (t=150us)			I _{DM}	150		
Continuous Source Current(Diode Conduction)	T _C =25°C		I _S	34		
	T _A =25°C			4.6		
Single Pulse Avalanche Current	L=0.1mH		I _{AS}	16		
			E _{AS}	13		mJ
Power Dissipation	T _C =25°C	T _C =75°C	P _D	38	24	W
	T _A =25°C	T _A =75°C		4.8	3.2	
Operating Junction Temperature			T _J	-55/150		°C
Storage Temperature Range			T _{STG}			
Thermal Resistance-Junction to Ambient	t ≤ 10 s		R _{θJA}	20		°C/W
Maximum Junction-to-Case (Drain)	Steady-State		R _{θJA}	2.6		

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

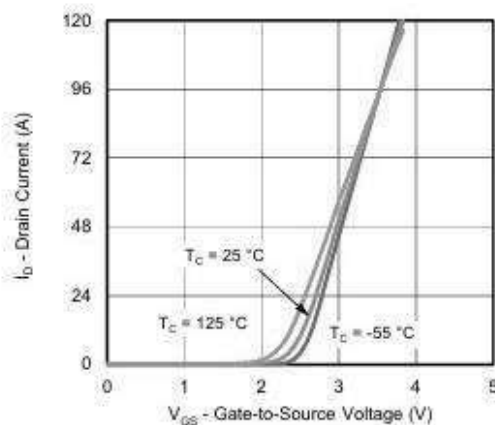
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.7	2.5	
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=24V, V_{GS}=0V$			1	uA
		$V_{DS}=24V, V_{GS}=0V$ $T_J=85^\circ C$			10	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 10V, V_{GS}=10V$	40			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		2.6	3.15	m Ω
		$V_{GS}=4.5V, I_D=15A$		3.7	4.45	
Forward Transconductance	g_{FS}	$V_{DS}=15V, I_D=10A$		52		S
Diode Forward Voltage	V_{SD}	$I_S=5A, V_{GS}=0V$		0.7	1.2	V
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=15V, V_{GS}=4.5V$ $I_D \equiv 10A$		7.6	12	nC
Gate-Source Charge	Q_{gs}			3.6		
Gate-Drain Charge	Q_{gd}			1.4		
Gate Resistance	R_g	$f=1MHz$	0.4	1.8	3.6	Ω
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V$ $f=1MHz$		1150		pF
Output Capacitance	C_{oss}			405		
Reverse Transfer Capacitance	C_{rss}			35		
Turn-On Time	$t_{d(on)}$	$V_{DD}=15V, R_L=1.5\Omega$ $I_D \equiv 15A, V_{GEN}=10V$ $R_G=1.0\Omega$		10	20	ns
	t_r			5	10	
Turn-Off Time	$t_{d(off)}$			20	40	
	t_f			5	10	

N-CH 30V Fast Switching MOSFET
 $V_{DS}=30V$, $I_D=80A$, $R_{DS(on)}=3.15m\Omega$

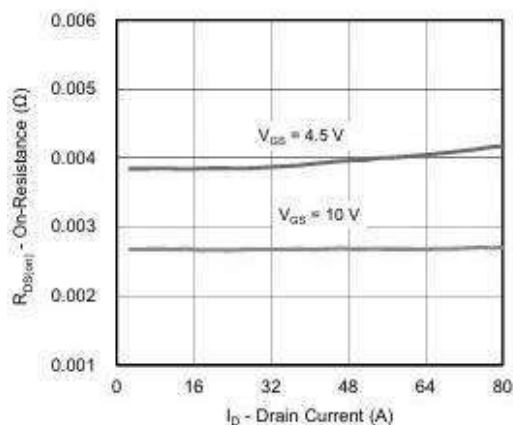
➤ Typical Characteristics



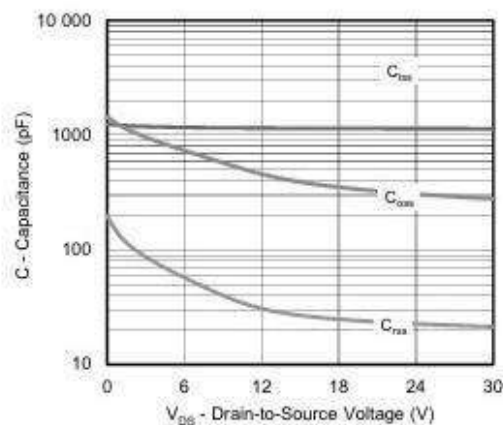
Output Characteristics



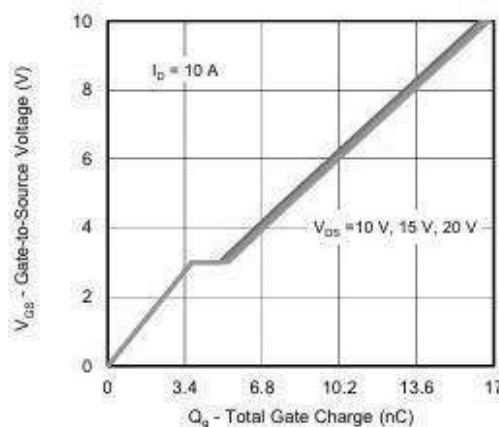
Transfer Characteristics



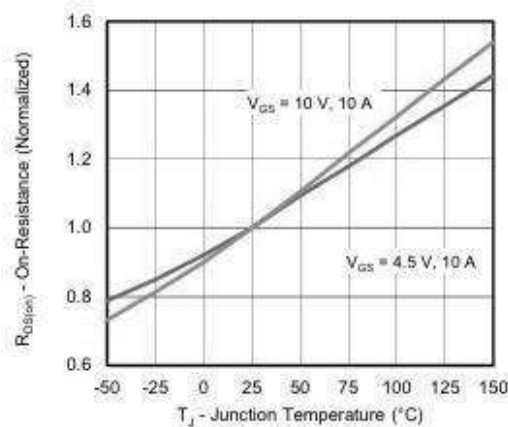
On-Resistance vs. Drain Current and Gate Voltage



Capacitance

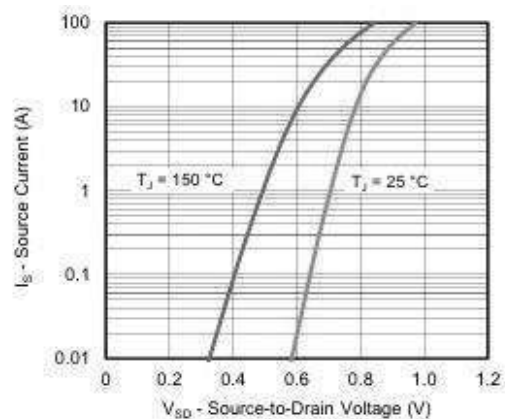


Gate Charge

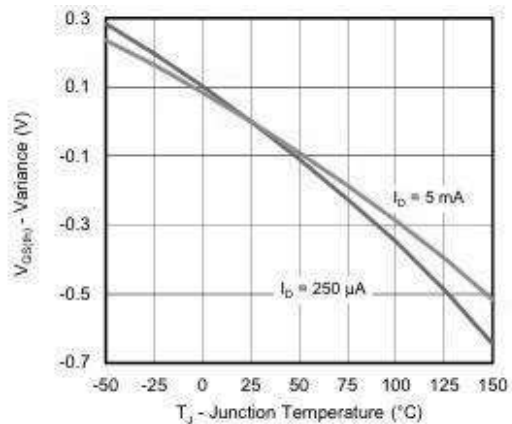


On-Resistance vs. Junction Temperature

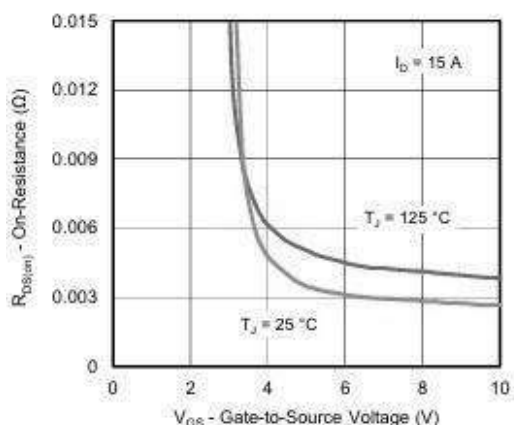
➤ Typical Characteristics



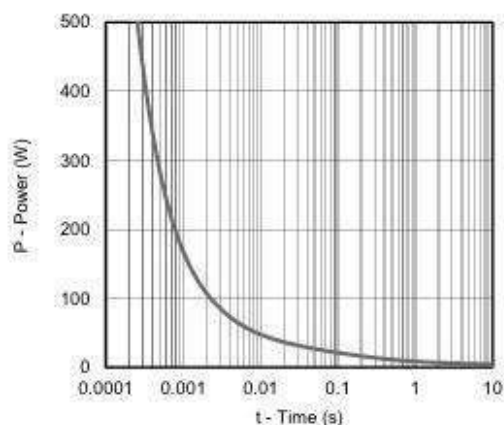
Source-Drain Diode Forward Voltage



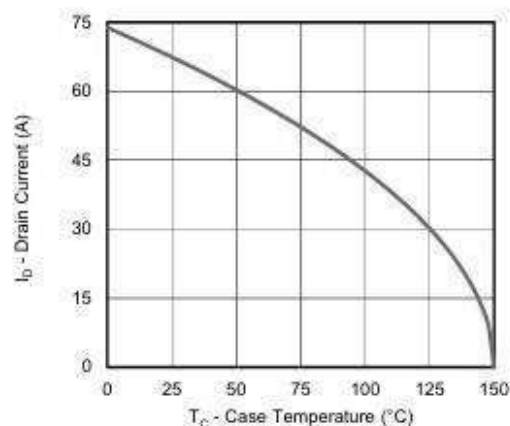
Threshold Voltage



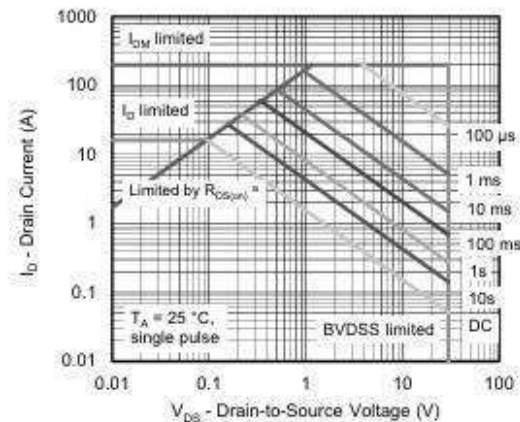
On-Resistance vs. Gate-to-Source Voltage



Single Pulse Power, Junction-to-Ambient

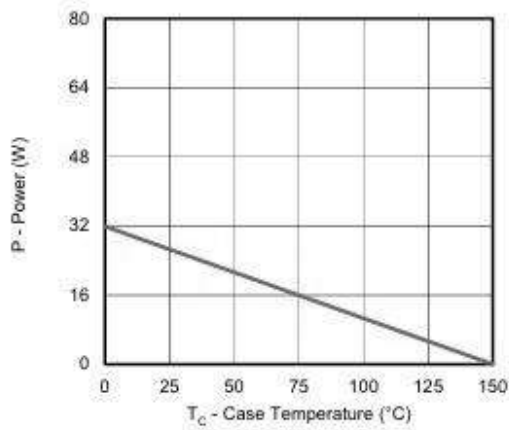


Current Derating ^a

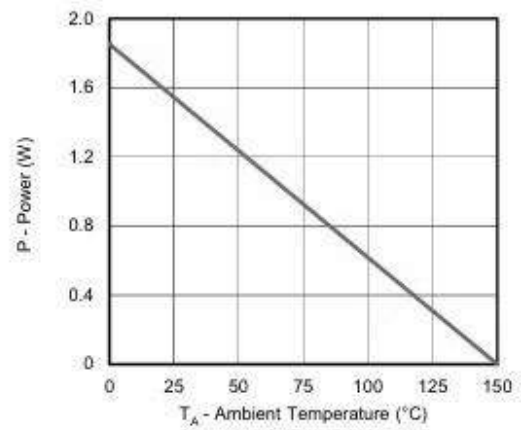


Safe Operating Area, Junction-to-Ambient

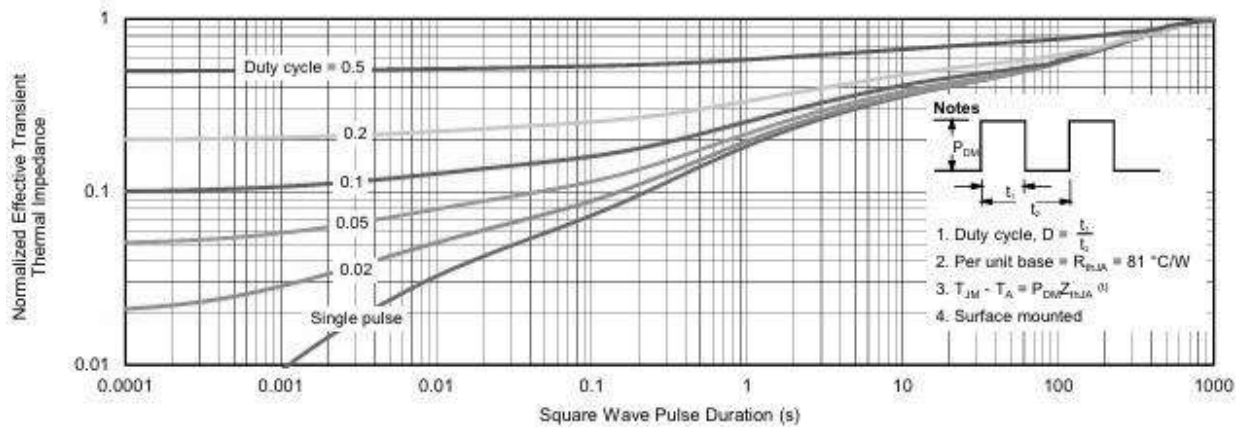
➤ Typical Characteristics



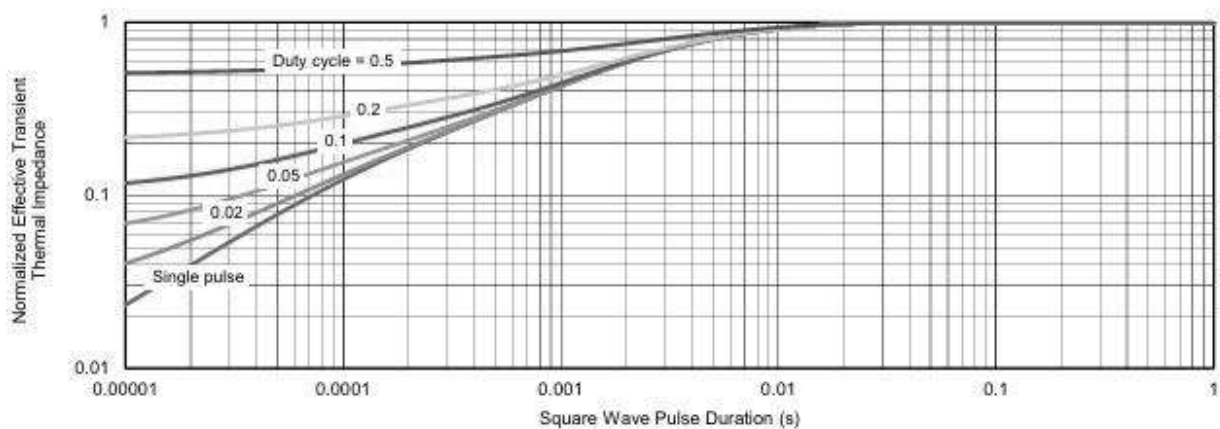
Power, Junction-to-Case



Power, Junction-to-Ambient

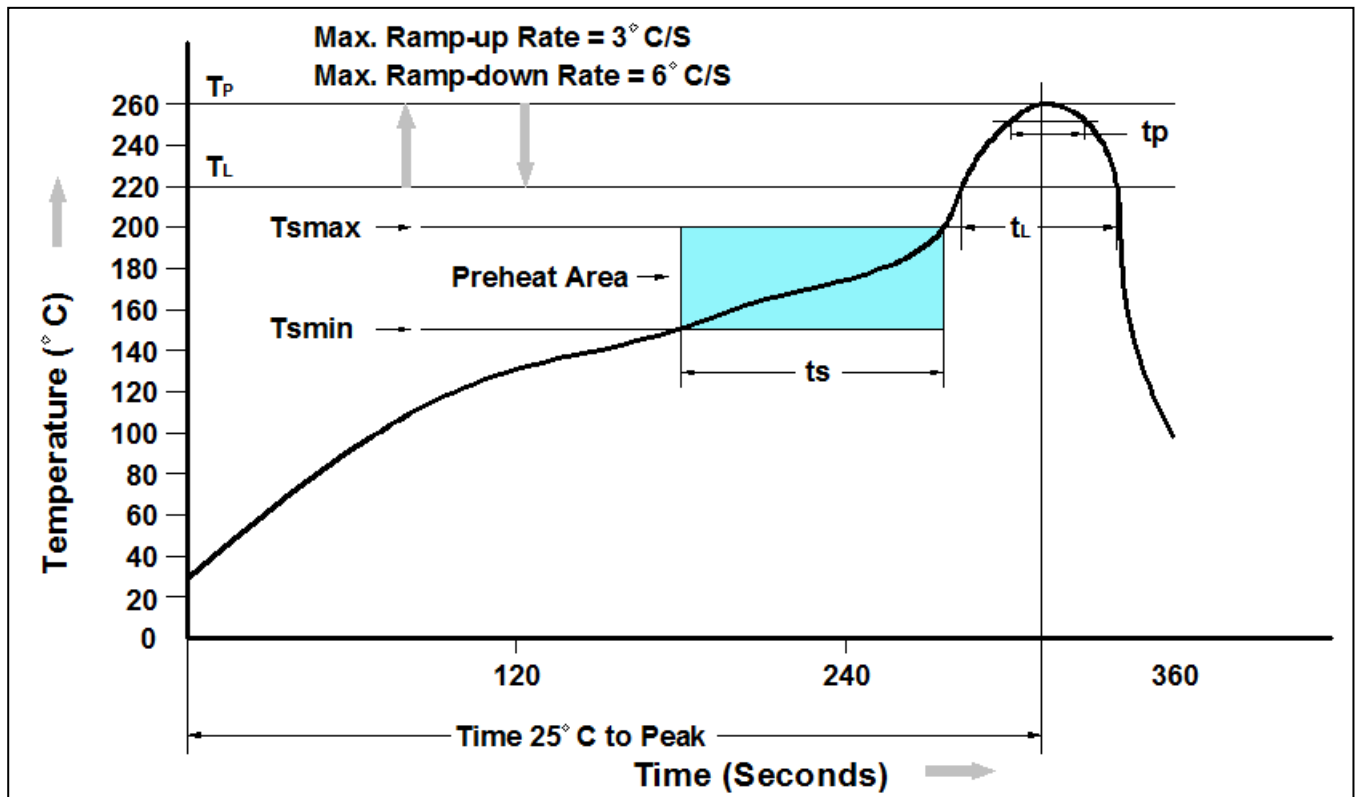


Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Case

➤ Recommend IR Reflow Soldering Thermal Profile

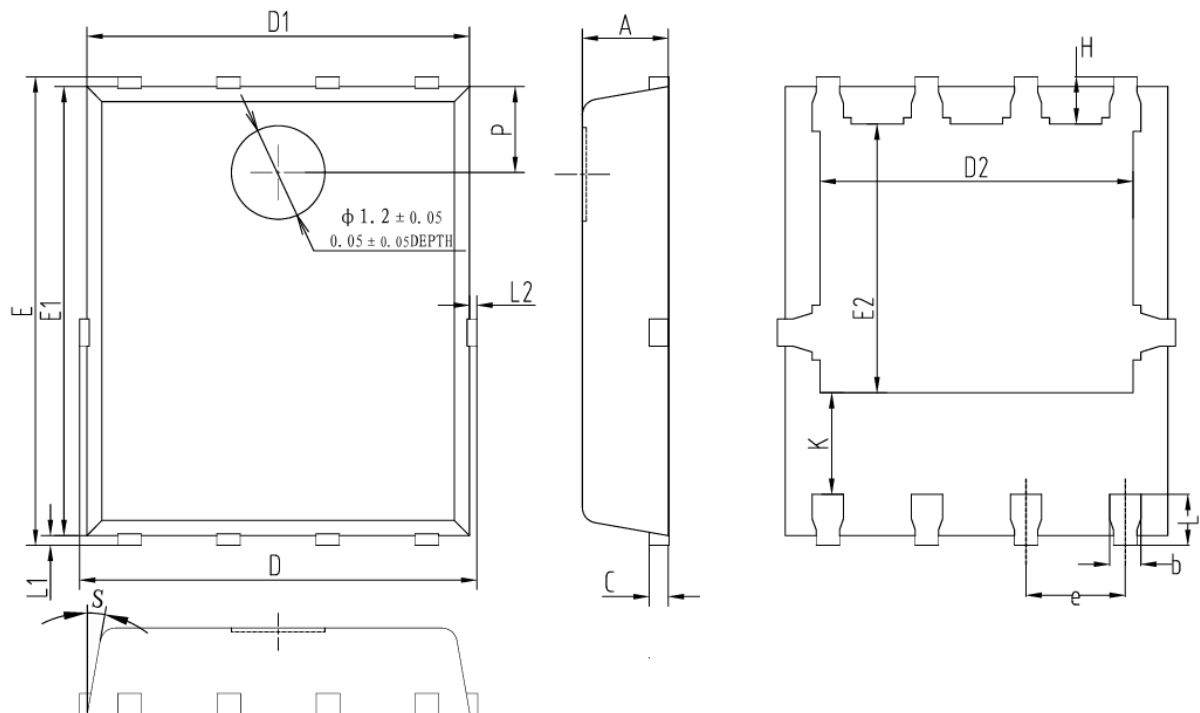


Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T _{smin})	150°C
Temperature Max. (T _{smax})	200°C
Time (t _s) from (T _{smin} to T _{smax})	60-120 seconds
Average Ramp-up Rate (t _L to t _P)	3°C/second max.
Liquidous Temperature (T _L)	217°C
Time (t _L) Maintained Above (T _L)	60 – 150 seconds
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
PAN63TY12CSY	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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