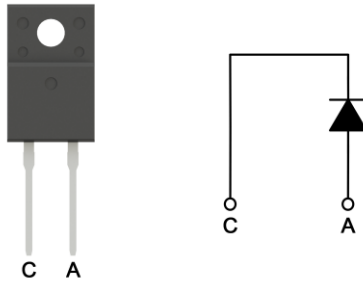


Product Summary

V_{RRM}	650	V
$I_F @ T_C=105^{\circ}C$	8	A
$Q_C @ V_R=400V$	23	nC

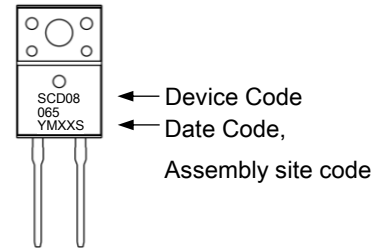
TO-220FP-2L



Features

- Negligible reverse recovery
- High surge current
- Positive temperature coefficient
- Pb-free lead plating and halogen-free

Marking



YMXX: Date Code Marking

Y: Year Code, the last digit of Christian year

M: Month Code

A: Jan	B: Feb	C: Mar	D: Apr	E: May	F: Jun
G: Jul	H: Aug	J: Sep	K: Oct	L: Nov	M: Dec

XX: Production Serial Number, 01~99

S: Assembly site code, Site 1: A

Ordering Information

Device	Package	Shipping
SCD08065FP2-0-UF-G	TO-220FP-2L	50 pcs/tube, 40 tubes/box, 4 boxes / carton

0: Product rank, zero for no rank products.

UF: Packing spec, UB : 50 pcs / tube, 40 tubes/box

G: Environment friendly grade: S for RoHS compliant products, G for RoHS compliant and green compound products.

Absolute Maximum Ratings ($T_A=25^{\circ}C$)

Parameter	Symbol	Value	Unit	
Repetitive Peak Reverse Voltage	V_{RRM}	650	V	
Continuous Forward Current @ $T_C=25^{\circ}C$	I_F	12.5	A	
Continuous Forward Current @ $T_C=73^{\circ}C$		10		
Continuous Forward Current @ $T_C=105^{\circ}C$		8		
Non-repetitive Forward Surge Current @ $T_C=25^{\circ}C$	*a I_{FSM}	64		
I^2t limit Value @ $T_C=25^{\circ}C$, $t_p=10ms$	I^2t	20.5	A^2s	
Total Power Dissipation	P_D	$T_C=25^{\circ}C$	45	W
		$T_C=110^{\circ}C$	20	
		$T_A=25^{\circ}C$ *b	5.6	
		$T_A=110^{\circ}C$ *b	2.4	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55~+175	$^{\circ}C$	
Steady State Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	3.3	$^{\circ}C/W$	
Steady State Thermal Resistance, Junction-to-Ambient	*b $R_{\theta JA}$	27		

Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
V_R	650	-	-	V	$I_R=50\mu\text{A}$
V_F	-	1.39	1.6	V	$I_F=8\text{A}$, $T_J=25^{\circ}\text{C}$
	-	1.86	-		$I_F=8\text{A}$, $T_J=175^{\circ}\text{C}$
I_R	-	0.82	50	μA	$V_R=650\text{V}$, $T_J=25^{\circ}\text{C}$
	-	5	-		$V_R=650\text{V}$, $T_J=175^{\circ}\text{C}$
Dynamic					
C_J	-	430	-	pF	$V_R=0\text{V}$, $f=1\text{MHz}$
	-	46	-		$V_R=200\text{V}$, $f=1\text{MHz}$
	-	43	-		$V_R=400\text{V}$, $f=1\text{MHz}$
Q_C	-	23	-	nC	$V_R=400\text{V}$, $f=1\text{MHz}$
E_C	-	3.7	-	μJ	$V_R=400\text{V}$, $f=1\text{MHz}$

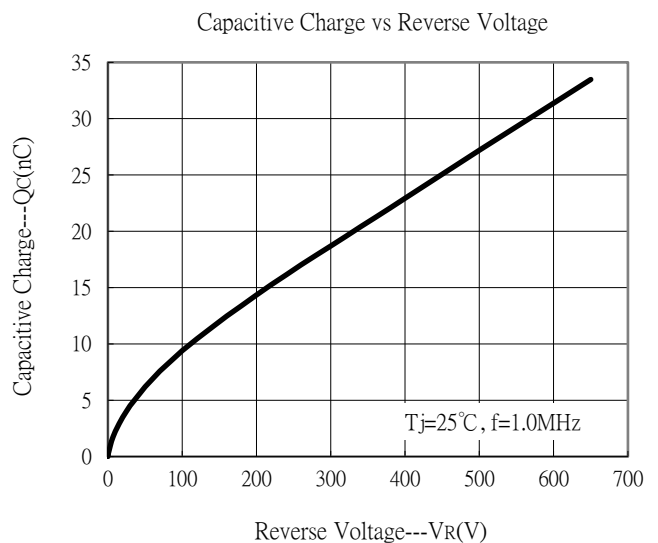
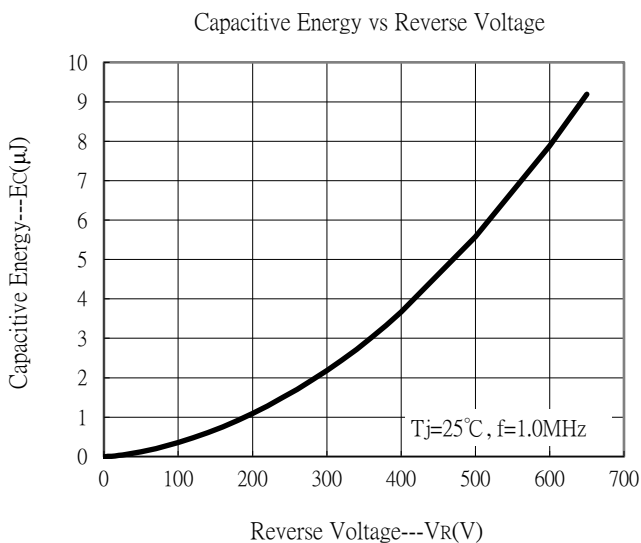
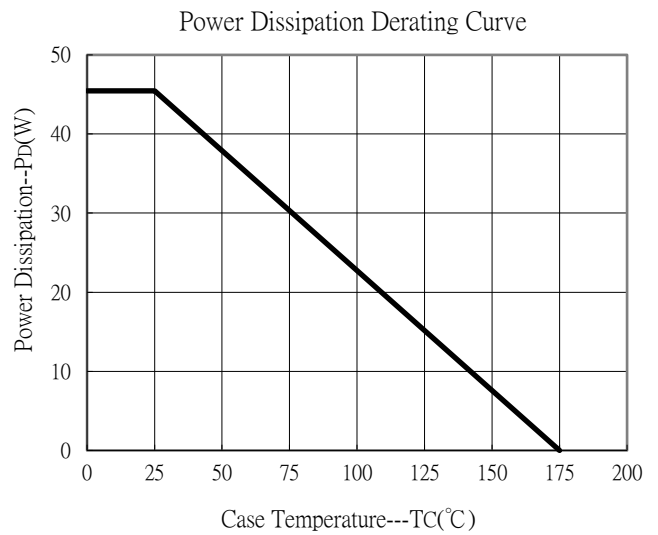
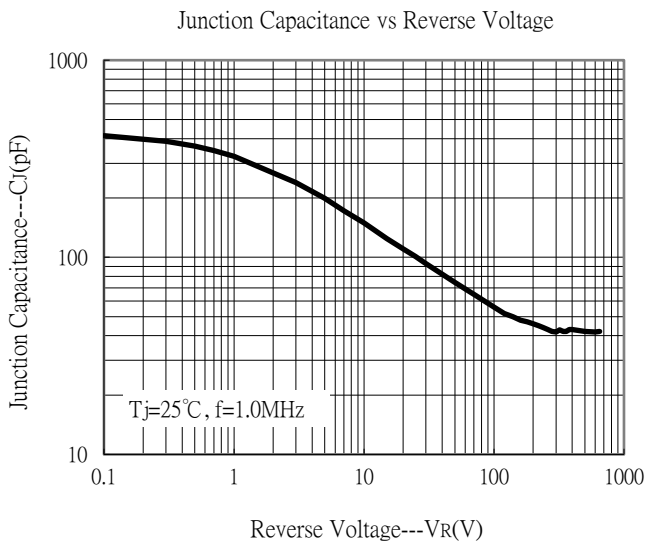
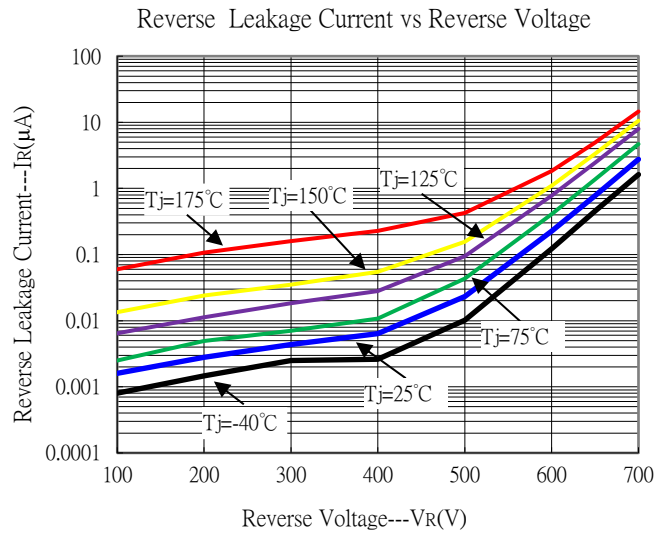
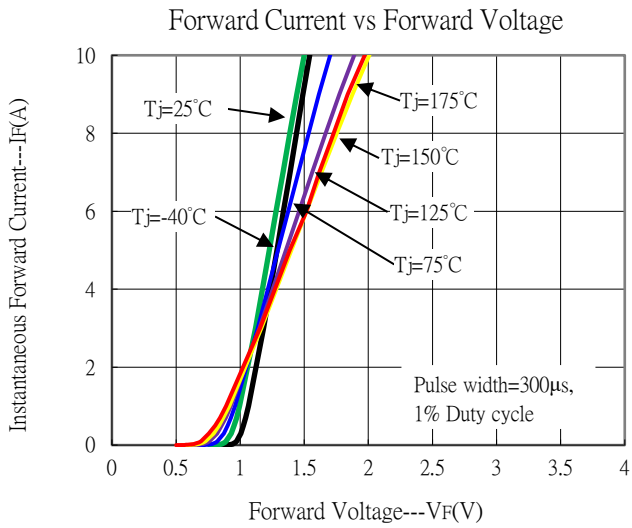
Note:

*a. Square wave, $t_p=10\text{ms}$.

*b. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz copper, in a still air environment with $T_A=25^{\circ}\text{C}$. The value in any given application depends on the user's specific board design.

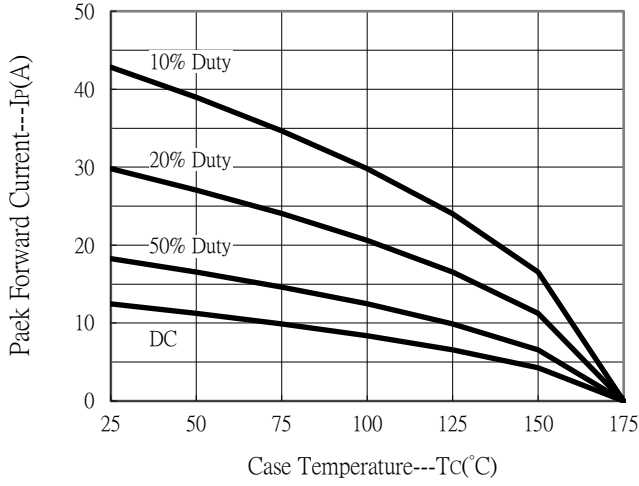
*c. Pulse Test : Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

Typical Characteristics

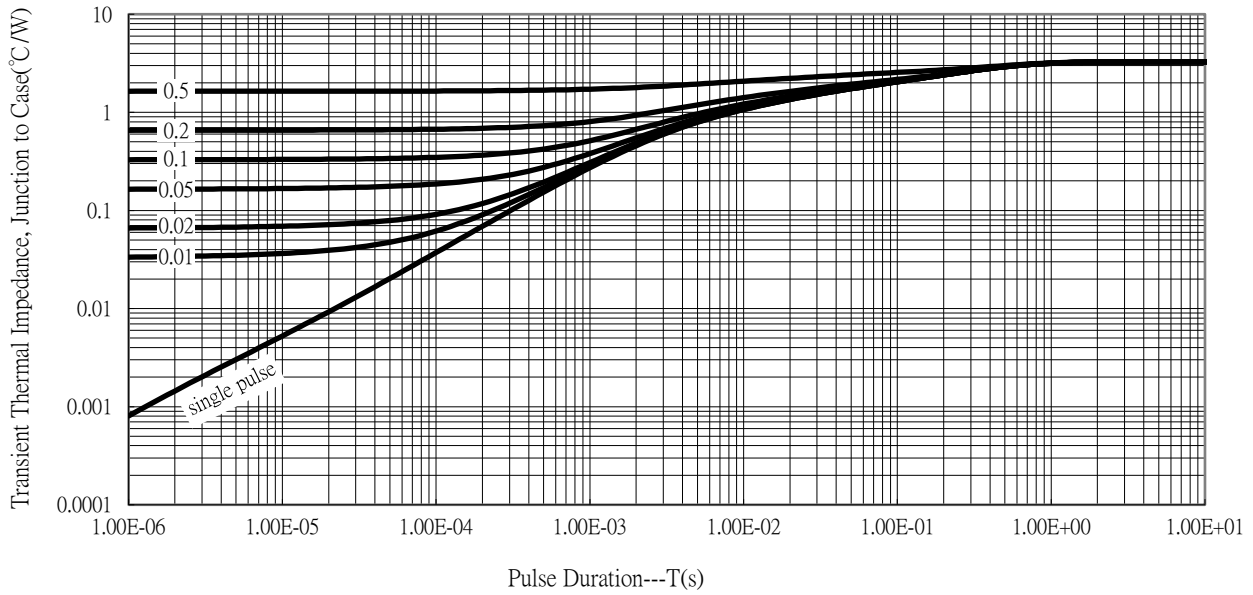


Typical Characteristics (Cont.)

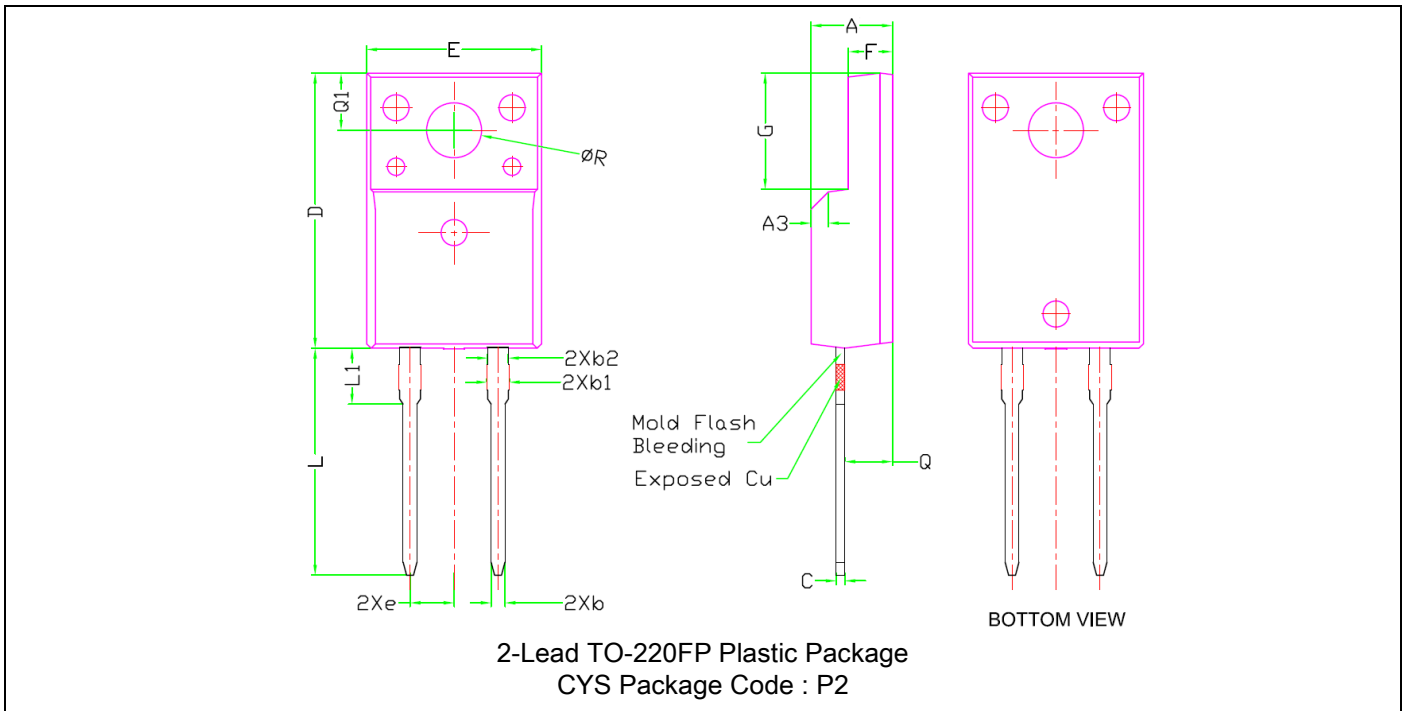
Peak Forward Current vs Case Temperature



Typical Transient Thermal Impedance



TO-220FP-2L Dimension



DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Min.		Min.	Max.	Min.	Max.
A	4.60	4.80	0.181	0.189	F	2.44	2.64	0.096	0.104
b	0.70	0.91	0.028	0.036	G	6.50	6.90	0.256	0.272
b1	1.20	1.47	0.047	0.058	L	12.90	13.30	0.508	0.524
b2	1.10	1.30	0.043	0.051	L1	3.13	3.33	0.123	0.131
C	0.45	0.63	0.018	0.025	Q	2.65	2.85	0.104	0.112
D	15.80	15.97	0.622	0.629	Q1	3.20	3.40	0.126	0.134
e	2.54		0.100		ΦR	3.08	3.28	0.121	0.129
E	10.00	10.30	0.394	0.406					

Note:

- Controlling dimension: millimeters.
- Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
- If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material:

- Lead: pure tin plated.
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0.

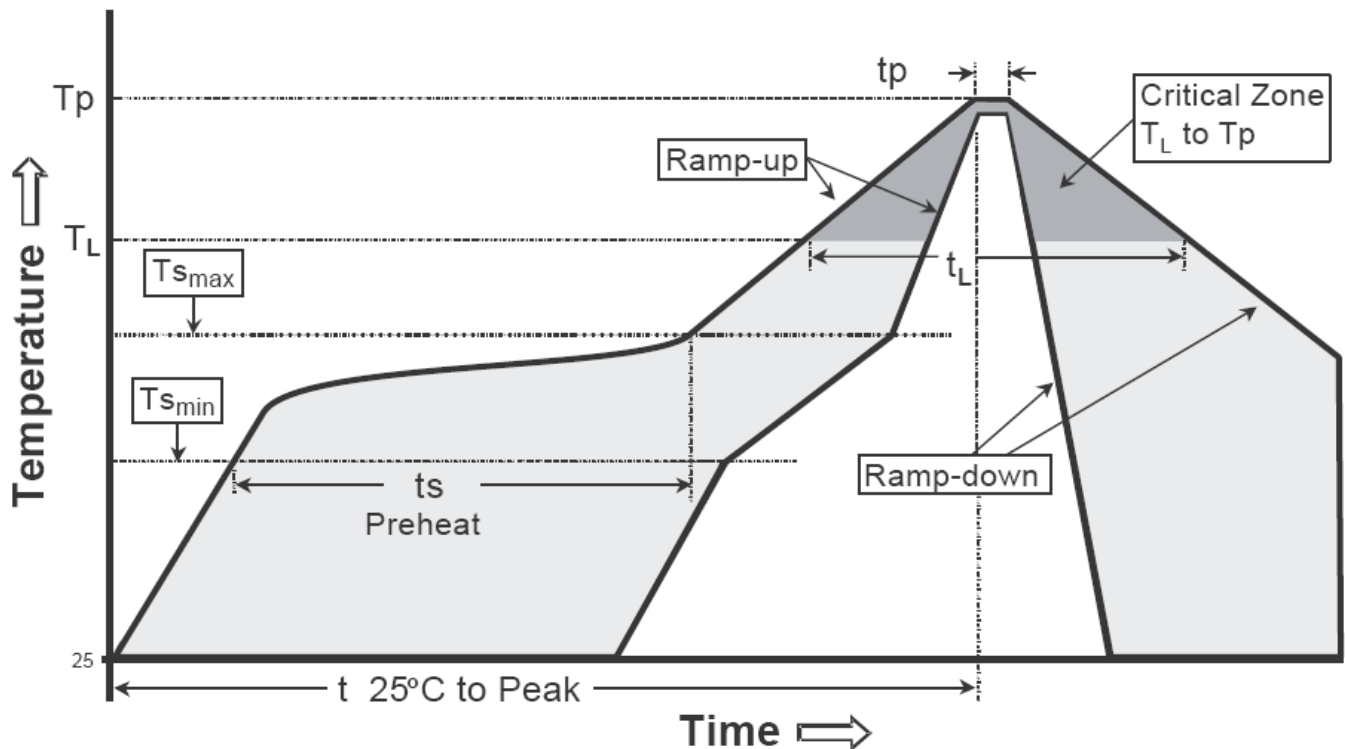
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Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (T _{smax} to T _p)	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(T _{s min})	100°C	150°C
-Temperature Max(T _{s max})	150°C	200°C
-Time(t _{s min} to t _{s max})	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (T _L)	183°C	217°C
- Time (t _L)	60-150 seconds	60-150 seconds
Peak Temperature(T _P)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(t _p)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.