

S3D08065A S3D08065E S3D08065G S3D08065F 650V SIC POWER SCHOTTKY RECTIFIERS

Description

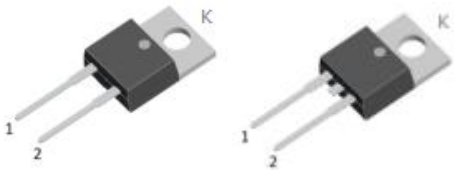
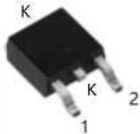
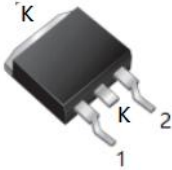
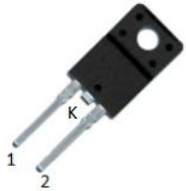

This 650V 8A diode is high voltage Schottky rectifier that has very low total conduction losses and very stable switching characteristics over temperature extremes. The S3D08065A/S3D08065E/S3D08065G/S3D08065F are ideal for energy sensitive, high frequency applications in challenging environments.

Features

- 175°C T_J operation
- Ultra-low switching loss
- Switching speeds independent of operating temperature
- Low total conduction losses
- High forward surge current capability
- High package isolation voltage
- Terminals finish: 100% Pure Tin
- “-A” is an AEC-Q101 qualified device
- Pb – Free Device
- All SMC parts are traceable to the wafer lot
- Additional electrical and life testing can be performed upon request

Applications

- Alternative energy inverters
- Power Factor Correction (PFC)
- Free-Wheeling diodes
- Switching supply output rectification
- Reverse polarity protection

S3D08065A	S3D08065E	S3D08065G	S3D06065F
			
TO-220AC (TO-220-2)	DPAK (TO-252-2)	D ² PAK (TO-263-2)	ITO-220AC (TO-220-F2)
			

Maximum Ratings

Characteristics	Symbol	Condition	Max.	Units
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_{DC}	-	650	V
Average Rectified Forward Current	$I_{F(AV)1}$	$T_c=25^{\circ}\text{C}$	27	A
	$I_{F(AV)2}$	$T_c=153^{\circ}\text{C}$	8	A
Repetitive Peak Forward Surge Current	I_{FRM1}	10ms, Half Sine pulse, $T_c=25^{\circ}\text{C}$	37.5	A
	I_{FRM2}	10ms, Half Sine pulse, $T_c=110^{\circ}\text{C}$	25.5	A
Peak One Cycle Non-Repetitive Surge Current	I_{FSM1}	10ms, Half Sine pulse, $T_c=25^{\circ}\text{C}$	90	A
	I_{FSM2}	10ms, Half Sine pulse, $T_c=110^{\circ}\text{C}$	60	A
Non-Repetitive Peak Forward Surge Current	$I_{F,Max1}$	10 μs . Pulse, $T_c=25^{\circ}\text{C}$	650	A
	$I_{F,Max2}$	10 μs . Pulse, $T_c=110^{\circ}\text{C}$	530	A
Power Dissipation	P_{tot1}	$T_c=25^{\circ}\text{C}$	103	W
	P_{tot2}	$T_c=110^{\circ}\text{C}$	44.5	W
TO-220 Mounting Torque		M3 Screw	1	Nm
		6-32 Screw	8.8	bf-in

Electrical Characteristics:

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	V_{F1}	@ 8A, Pulse, $T_J = 25^{\circ}\text{C}$	1.45	1.7	V
	V_{F2}	@ 8A, Pulse, $T_J = 175^{\circ}\text{C}$	1.65	2.0	V
Reverse Current*	I_{R1}	@ $V_R = \text{rated } V_R, T_J = 25^{\circ}\text{C}$	0.3	10	μA
	I_{R2}	@ $V_R = \text{rated } V_R, T_J = 175^{\circ}\text{C}$	3	100	μA
Junction Capacitance	C_T	$V_R=0\text{V}, T_J=25^{\circ}\text{C}, f=1\text{MHz}$	650	-	pF
Reverse Recovery Charge	Q_C	$I_F = 8\text{A}, di/dt = 200\text{A}/\mu\text{s}$ $V_R = 400\text{V}, T_J = 25^{\circ}\text{C}$	40.55	-	nC
Capacitance Stored Energy	E_C	$V_R = 400\text{V}$	9.93	-	μJ

* Pulse width < 300 μs , duty cycle < 2%

Thermal-Mechanical Specifications:

Characteristics	Symbol	S3D08065A	S3D08065E	S3D08065G	S3D08065F	Units
Junction Temperature	T_J	-55 to +175				°C
Storage Temperature	T_{stg}	-55 to +175				°C
Typical Thermal Resistance Junction to Case	$R_{\theta JC}$	1.46	1.5	1.65	3.5	°C/W

Ordering Information

Device	Package	Shipping
S3D08065A	TO-220AC(TO-220-2)	50pcs / tube
S3D08065E	DPAK(TO-252-2)	2500pcs / reel
S3D08065G	D2PAK(TO-263-2)	800 pcs / reel
S3D08065F	ITO-220AC(TO-220-F2)	50pcs / tube

For information on tape and reel specifications, including part orientation and tape sizes, please refer to our tape and reel packaging specification.

Ratings and Characteristics Curves

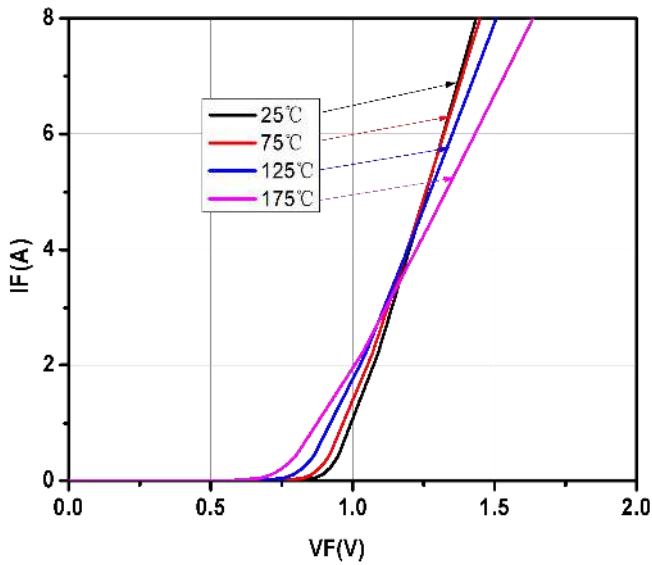


Fig.1-Typical Forward Voltage Characteristics

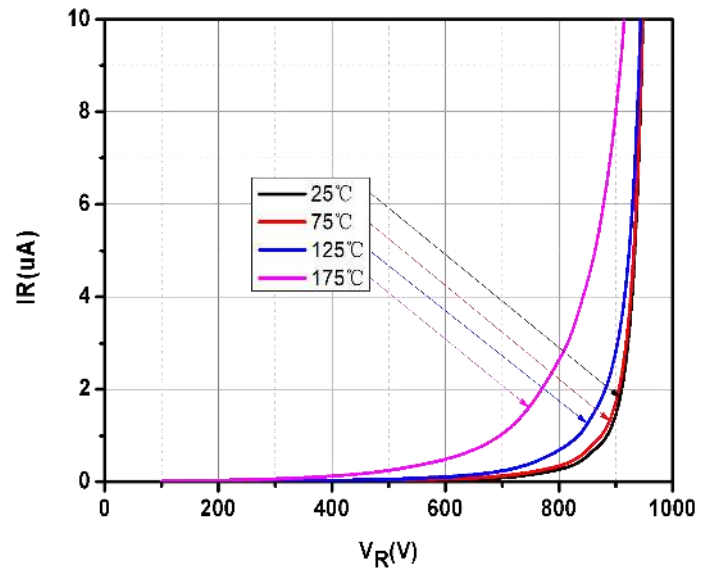


Fig.2-Typical Reverse Characteristics

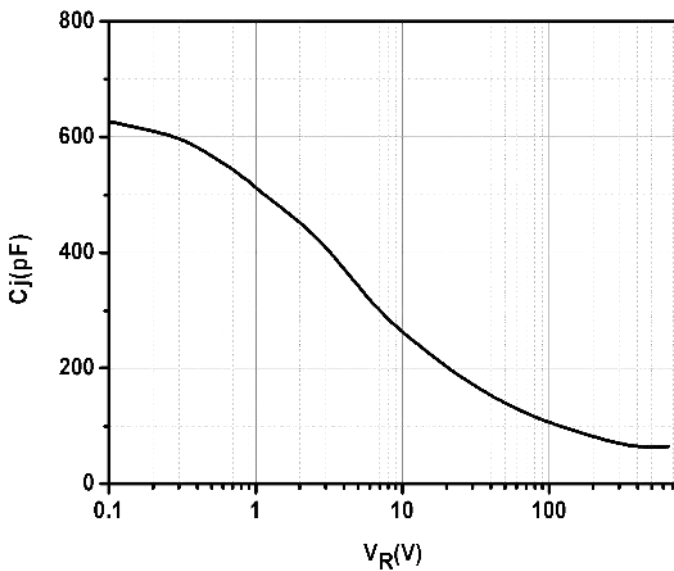


Fig.3-Capacitance vs. Reverse Voltage

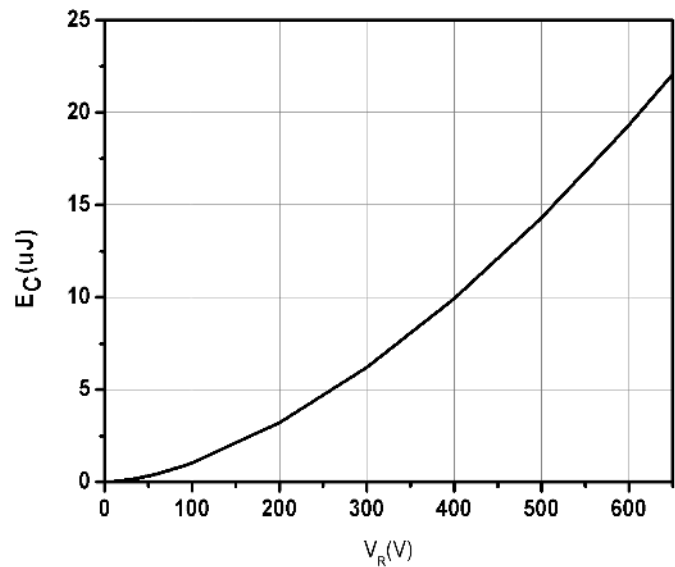


Fig.4-Total Capacitance Charge vs. Reverse Voltage

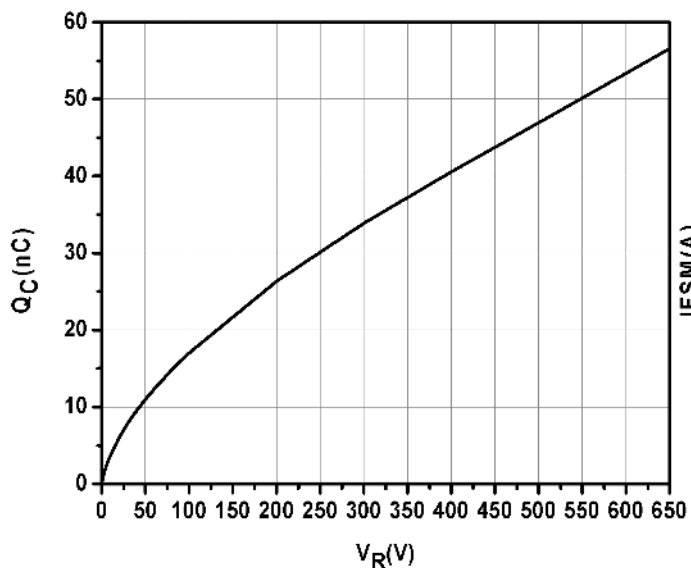


Fig.5-Capacitance Stored Energy

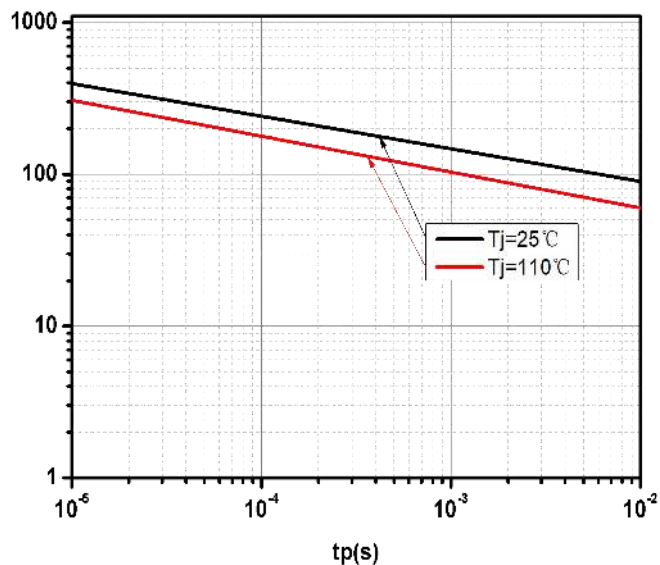


Fig.6-Non-repetitive peak forward surge current versus pulse duration (sinusoidal waveform)

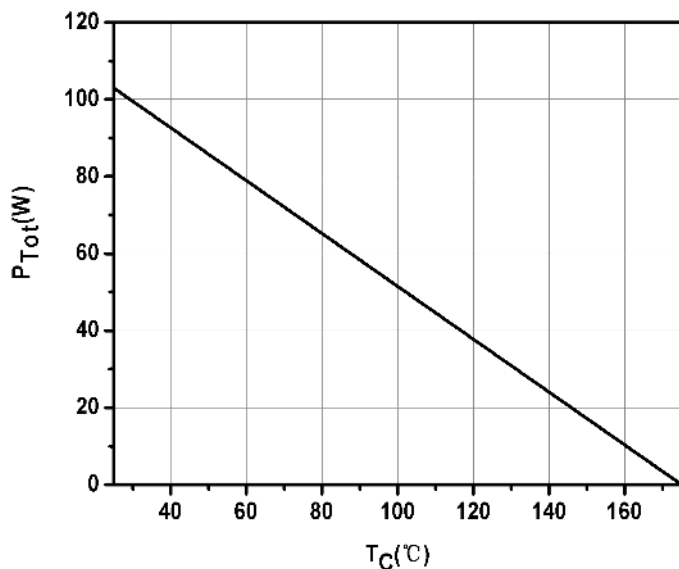


Fig.7-Power Derating

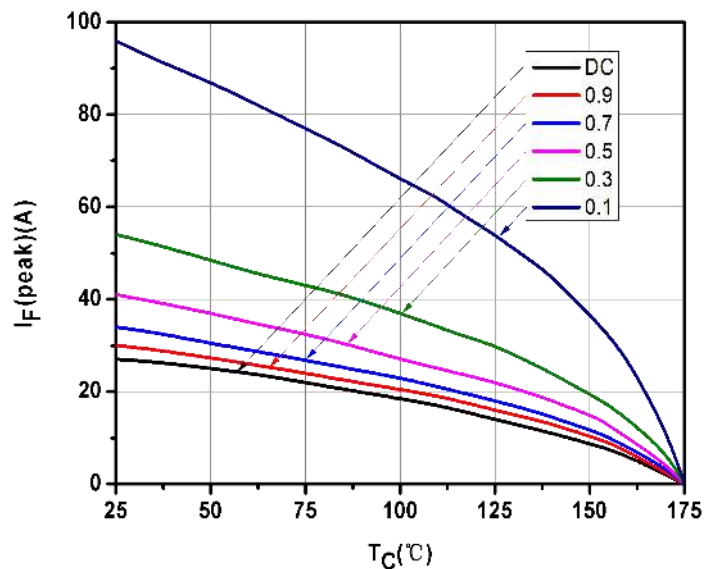
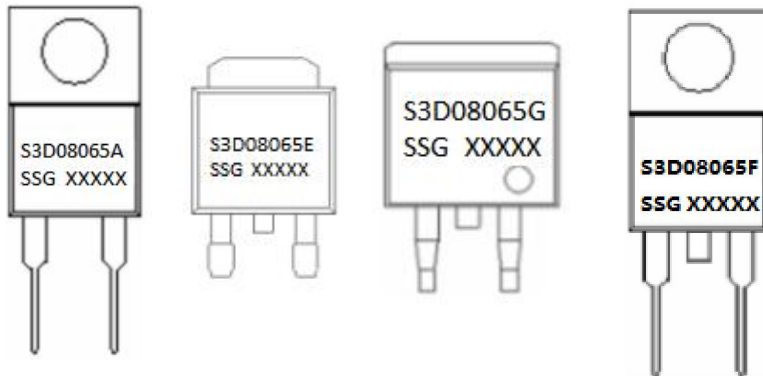


Fig.8-Current Derating

Marking Diagram

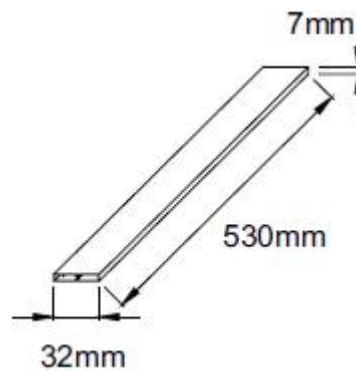


Where XXXXX is YYWWL

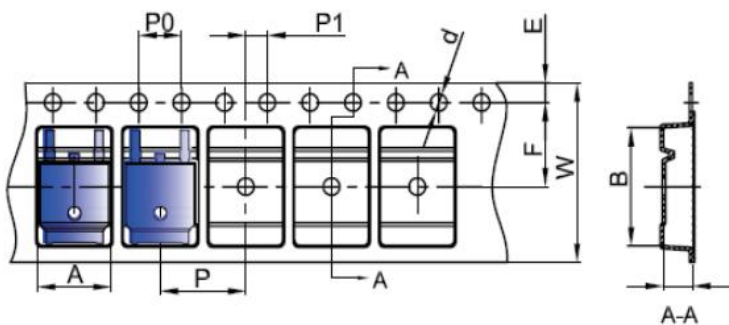
S3D = Device Type
A/E/G/F = Package type
08 = Forward Current (8A)
65 = Reverse Voltage (650V)
SSG = SSG
YY = Year
WW = Week
L = Lot Number

Cautions: Molding resin
Epoxy resin UL:94V-0

Tube Specification(TO-220-2/TO-220-F2)

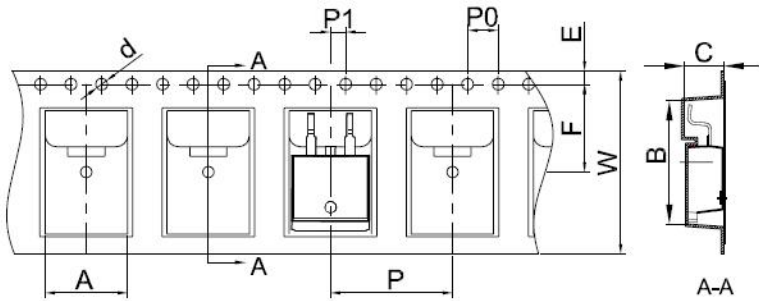


Carrier Tape & Reel Specification DPAK(TO-252-2)



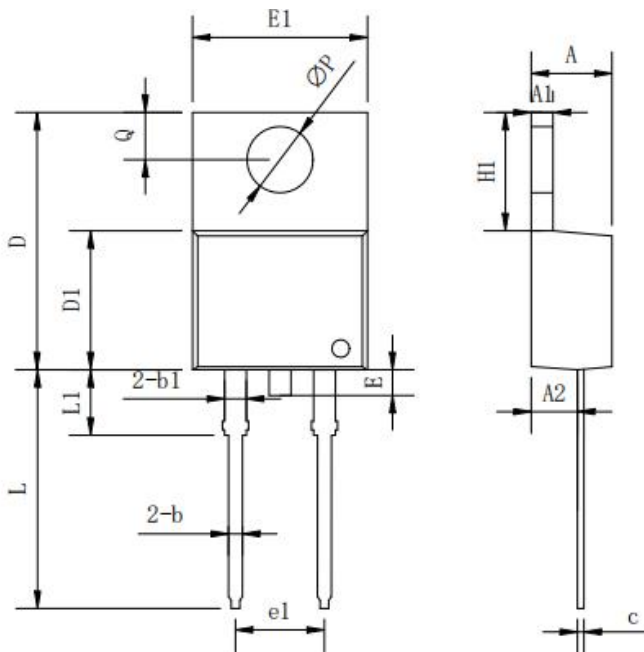
SYMBOL	Millimeters	
	Min.	Max.
A	6.80	7.00
B	10.40	10.60
C	2.60	2.80
d	Φ1.45	Φ1.65
E	1.65	1.85
F	7.40	7.60
P0	3.90	4.10
P	7.90	8.10
P1	1.90	2.10
W	15.90	16.30

Carrier Tape & Reel Specification D2PAK(TO-263-2)



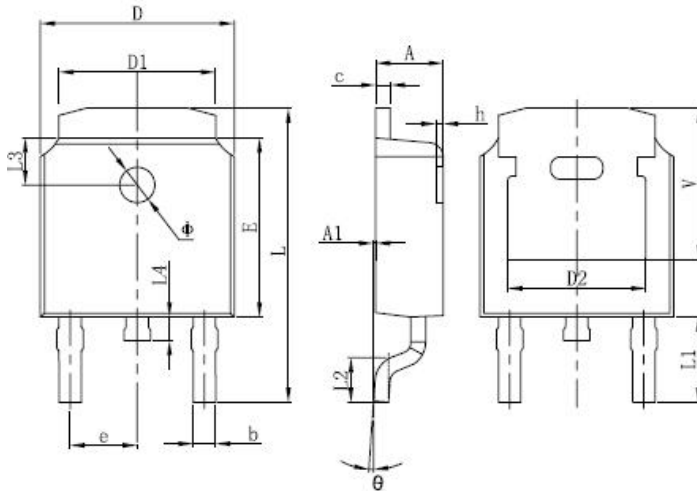
SYMBOL	Millimeters	
	Min.	Max.
A	10.70	10.90
B	16.03	16.23
C	5.11	5.31
d	1.45	1.65
E	1.65	1.85
F	11.40	11.60
P0	3.90	4.10
P	15.90	16.10
P1	1.90	2.10
W	23.90	24.30

Mechanical Dimensions TO-220AC(TO-220-2)



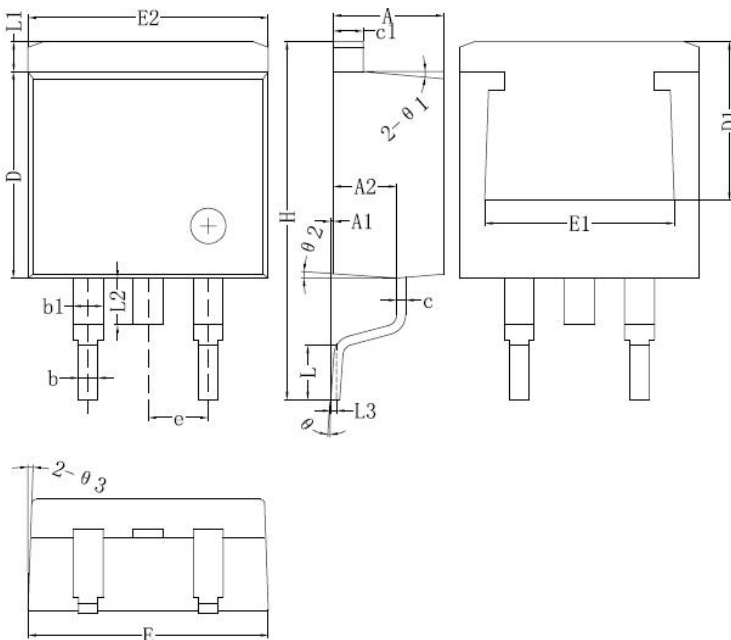
Symbol	Dimensions in millimeters		
	Min.	Typical	Max.
A	3.56	-	4.83
A1	0.51	-	1.40
A2	2.03	-	2.92
b	0.38	-	1.02
b1	1.14	-	1.78
c	0.31	-	0.61
D	14.22	-	16.51
D1	8.38	-	9.42
E	-	-	1.78
E1	9.65	10.16	10.67
e1	-	5.08	-
H1	5.84	-	6.86
L	12.70	-	14.73
L1	-	-	6.35
ΦP	-	3.56	-

Mechanical Dimensions DPAK(TO-252-2)



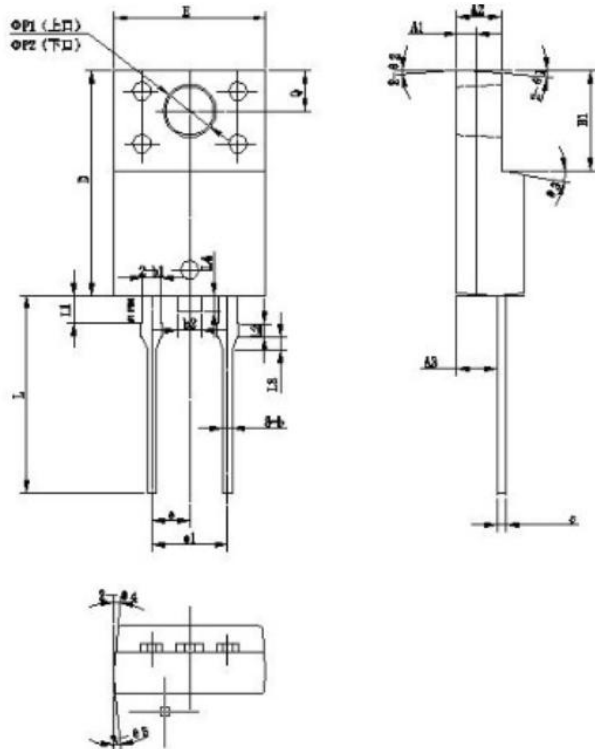
SYMBOL	Dimensions in millimeters		
	Min.	Typ.	Max.
A	2.18	-	2.39
A1	-	-	0.13
b	0.64	-	0.89
c	0.46	-	0.89
D	6.35	-	6.73
D1	4.95	-	5.46
D2	4.32	-	-
E	5.97	6.1	6.22
e	2.29BSC		
L	9.4	-	10.41
L1	2.90 REF.		
L2	1.4	1.52	1.78
L3	1.60 REF.		
L4	-	-	1.02
Φ	1.1	-	1.3
Θ	0°	-	10°
V	5.21	-	-

Mechanical Dimensions D²PAK(TO-263-2)



Symbol	Dimensions in millimeters	
	Min.	Max.
A	4.06	4.83
A1	0	0.26
b	0.51	0.99
b1	1.14	1.78
c	0.31	0.74
c1	1.14	1.65
D	8.38	9.65
D1	6.40	
E1	6.22	
E2	9.65	10.67
e	2.54BSC	
H	14.6	15.88
L	1.78	2.80
L1	-	1.68
L2	-	2.20
L3	0.255BSC	
Θ	0	8°

Mechanical Dimensions ITO-220AC(TO-220-2F)



Symbol	Dimensions in millimeters		
	Min.	Typical	Max.
A	4.30	4.0	4.70
A1		1.30	
A2	2.80	3.00	3.20
A3	2.50	2.70	2.90
b	0.5	0.6	0.75
b1		1.20	
b2		1.60	
e	0.55	0.6	0.75
D	14.80	15.00	15.20
E	8.96	10.14	10.36
e1		2.55	
e1		5.10	
H1	8.50	8.70	8.90
L	17.70	18.20	18.70
L1		1.80	
L2		1.00	
L3		0.80	
L4		1.10	
ΦP1(上口)	3.30	3.50	3.70
ΦP1(下口)	2.99	3.19	3.39
Q	2.50	2.70	2.90
Θ1		5°	
Θ2		4°	
Θ3		10°	
Θ4		5°	
Θ5		5°	

Technical Data
Data Sheet N2425, REV. B



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