

S3D03065A/S3D03065F/S3D03065E/S3D03065I 3A 650V SIC POWER SCHOTTKY RECTIFIERS

Description

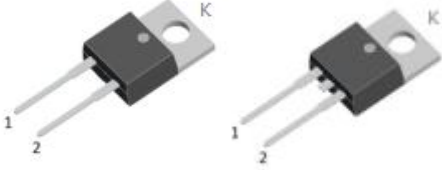
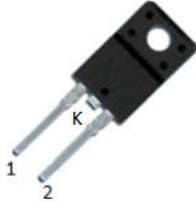
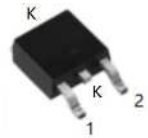

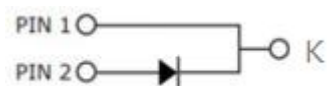
This 650V 3A diode is high voltage Schottky rectifier that has very low total conduction losses and very stable switching characteristics over temperature extremes. The S3D03065A/S3D03065F/S3D03065E/S3D03065I are ideal for energy sensitive, high frequency applications in challenging environments.

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

S3D03065A	S3D03065F	S3D03065E	S3D03065I
			
TO-220AC (TO-220-2)	ITO-220AC (TO-220-F2)	DPAK (TO-252-2)	TO-220-Isolation
			

Maximum Ratings@T_A=25°C unless otherwise specified

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°C	17	A
	I _{F(AV)2}	T _c =135°C	8	A
	I _{F(AV)3}	T _c =165°C	3	A
Repetitive Peak Forward Surge Current	I _{FRM1}	10ms, Half Sine pulse, T _c =25°C	23	A
	I _{FRM2}	10ms, Half Sine pulse, T _c =110°C	15	A
Peak One Cycle Non-Repetitive Surge Current	I _{FSM1}	10ms, Half Sine pulse, T _c =25°C	46	A
	I _{FSM2}	10ms, Half Sine pulse, T _c =110°C	32	A
Non-Repetitive Peak Forward Surge Current	I _{F,Max1}	10µs. Pulse, T _c =25°C	390	A
	I _{F,Max2}	10µs. Pulse, T _c =110°C	265	A
Power Dissipation	P _{tot1}	T _c =25°C	89	W
	P _{tot2}	T _c =110°C	39	W
TO-220 Mounting Torque		M3 Screw	1	Nm
		6-32 Screw	8.8	bf-in

Electrical Characteristics@T_A=25°C unless otherwise specified

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	V _{F1}	@ 3A, Pulse, T _J = 25 °C	1.4	1.7	V
	V _{F2}	@ 3A, Pulse, T _J = 175 °C	1.6	2.0	V
Reverse Current*	I _{R1}	@V _R = rated V _R T _J = 25 °C	0.03	2	µA
	I _{R2}	@V _R = rated V _R T _J = 175 °C	0.3	20	µA
Junction Capacitance	C _T	V _R =0V, T _J =25°C, f=1MHz	230	-	pF
Reverse Recovery Charge	Q _c	I _F = 3A, di/dt = 200A/µs V _R = 400 V, T _J =25°C	14.35	-	nC
Capacitance Stored Energy	E _c	V _R = 400 V, T _J =25°C	3.51	-	µJ

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



S3D03065A
 S3D03065F
 S3D03065E
 S3D03065I

Technical Data
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Thermal-Mechanical Specifications@T_A=25°C unless otherwise specified

Characteristics	Symbol	S3D03065A	S3D03065F	S3D03065E	S3D03065I	Units
Junction Temperature	T _J	-55 to +175				°C
Storage Temperature	T _{stg}	-55 to +175				°C
Typical Thermal Resistance Junction to Case	R _{θJC}	1.7	4	1.5	3.3	°C/W

Ordering Information

Device	Package	Shipping
S3D03065A	TO-220AC(TO-220-2)	50pcs / tube
S3D03065F	ITO-220AC(TO-220-F2)	50pcs / tube
S3D03065E	DPAK(TO-252-2)	2500pcs / reel
S3D03065ETR	DPAK(TO-252-2)	2500pcs / reel
S3D03065I	TO-220-Isolation	50pcs / tube
S3D03065A-A	TO-220AC(TO-220-2)	50pcs / tube
S3D03065F-A	ITO-220AC(TO-220-F2)	50pcs / tube
S3D03065E-A	DPAK(TO-252-2)	2500pcs / reel
S3D03065I-A	TO-220-Isolation	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

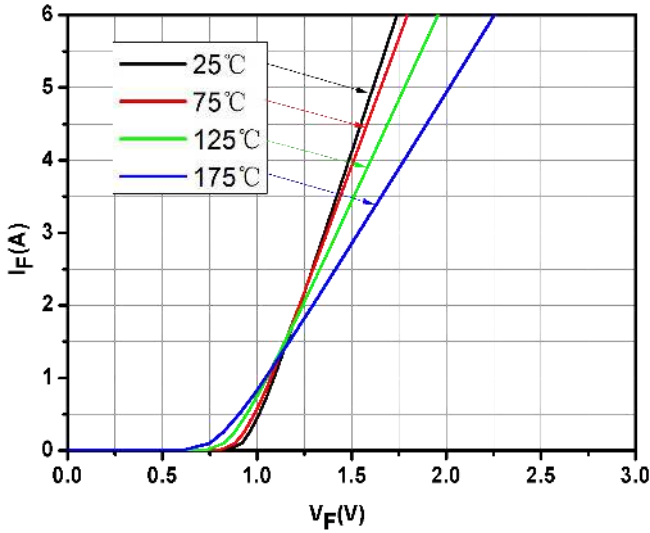


Fig.1-Typical Forward Voltage Characteristics

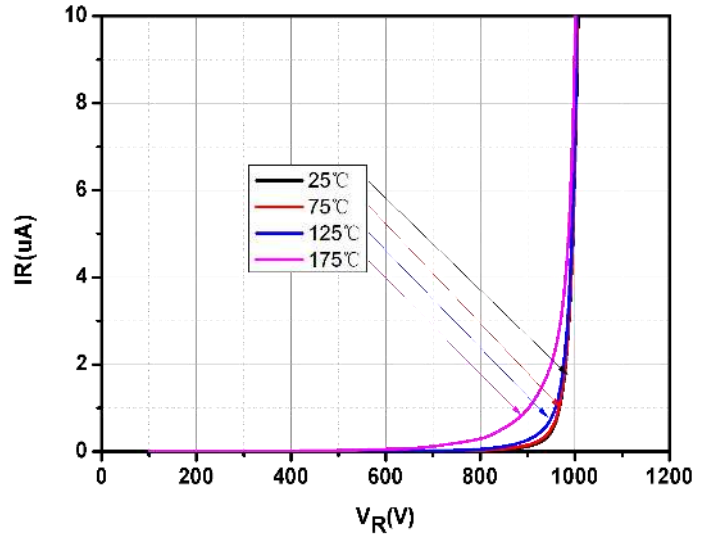


Fig.2-Typical Reverse Characteristics

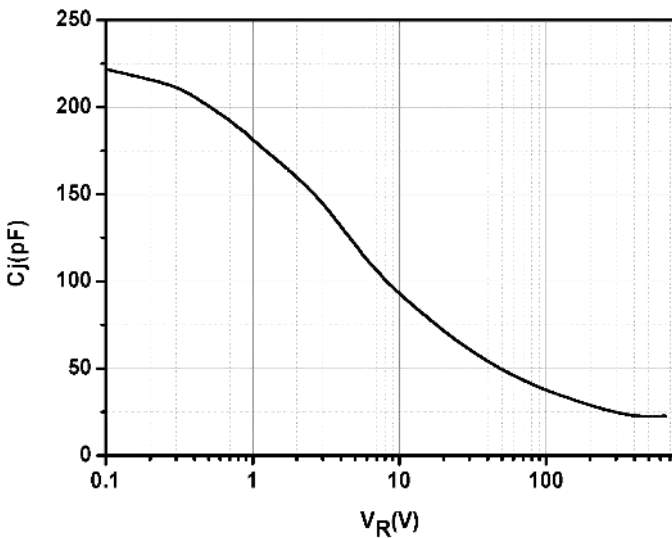


Fig.3-Capacitance vs. Reverse Voltage

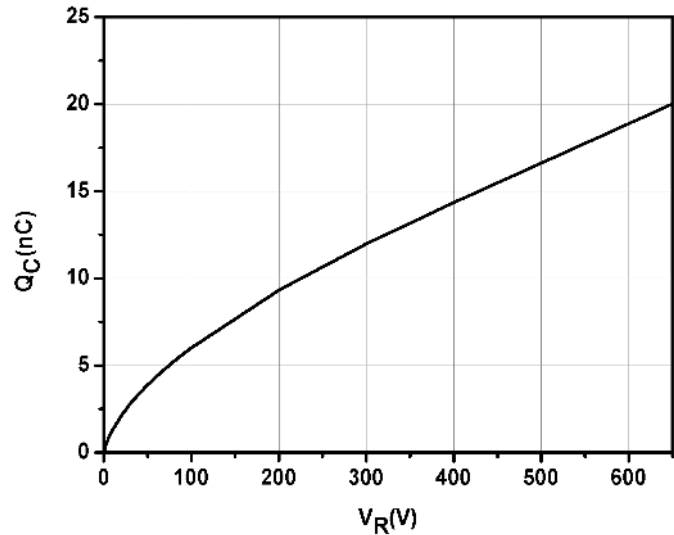


Fig.4-Total Capacitance Charge vs. Reverse Voltage

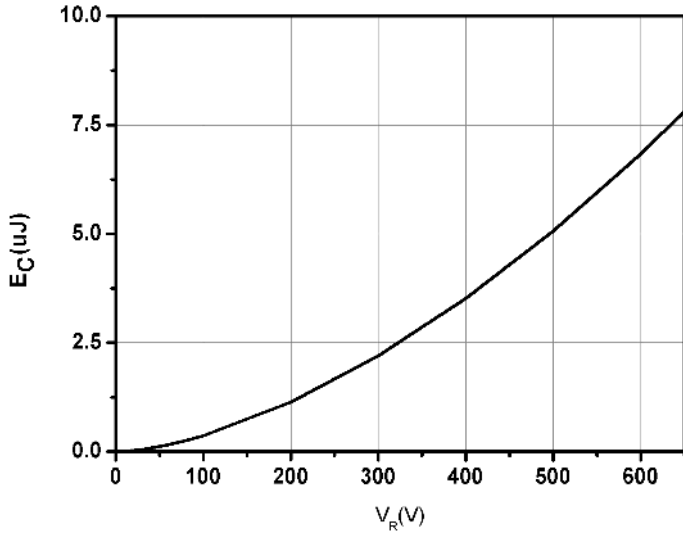


Fig.5-Capacitance Stored Energy

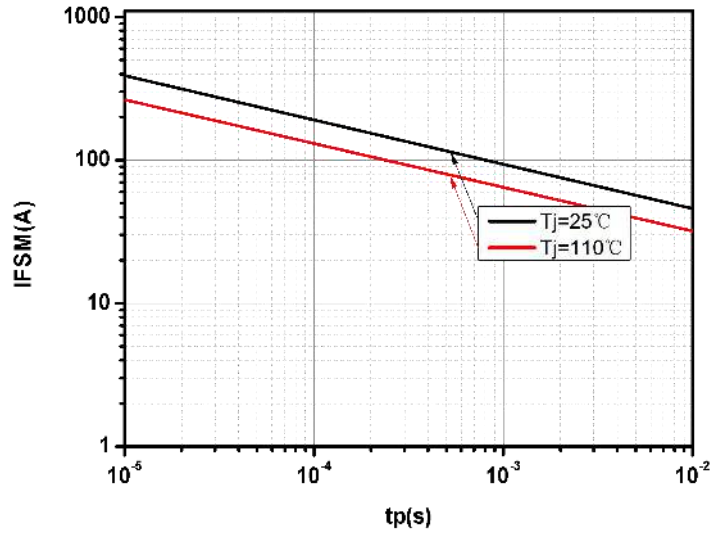


Fig.6-Non-repetitive peak forward surge current versus pulse duration (sinusoidal waveform)

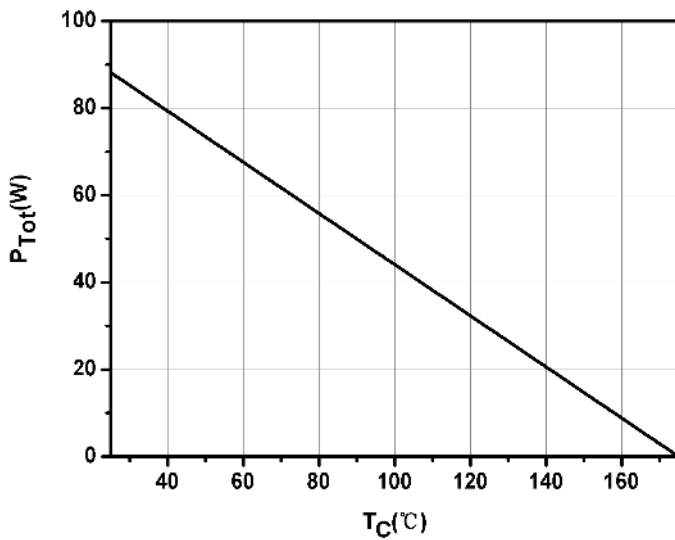


Fig.7-Power Derating

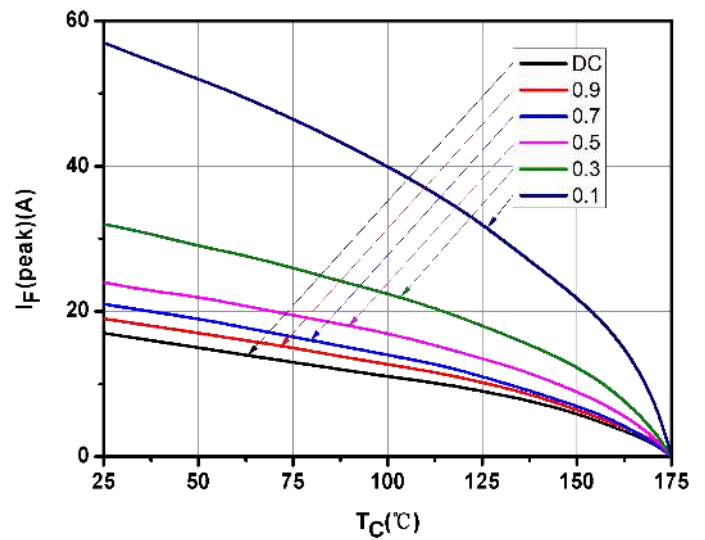
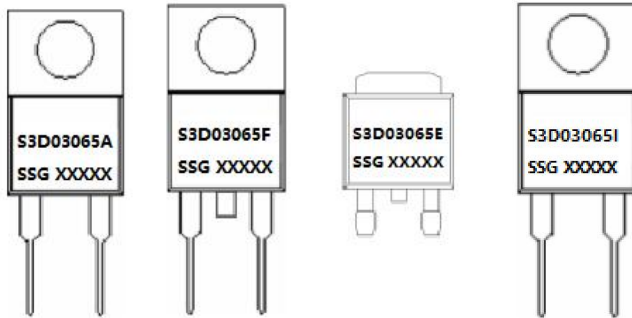


Fig.8-Current Derating

Marking Diagram

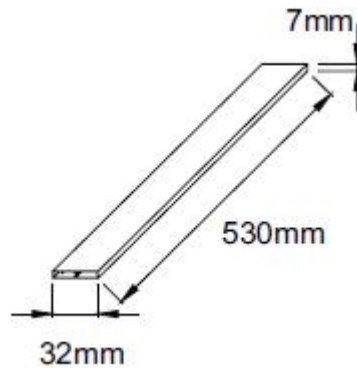


Where XXXXX is YYWWL

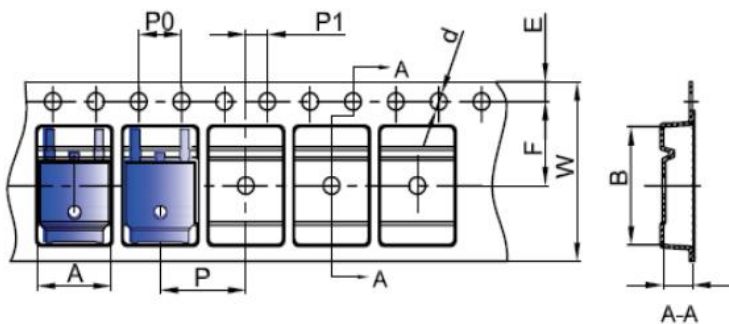
S3D = Device Type
A/F/E/I = Package type
03 = Forward Current (3A)
065 = Reverse Voltage (650V)
SSG = SSG
YY = Year
WW = Week
L = Lot Number

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

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

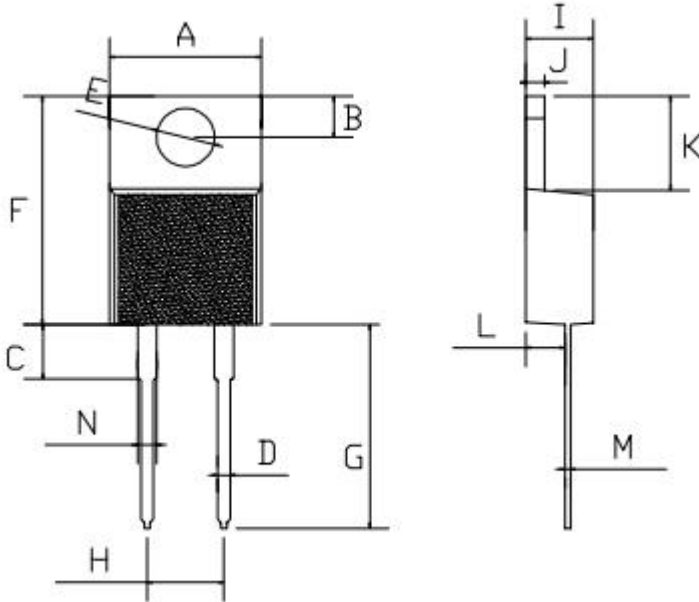


Carrier Tape & Reel Specification DPAK(TO-252-2)



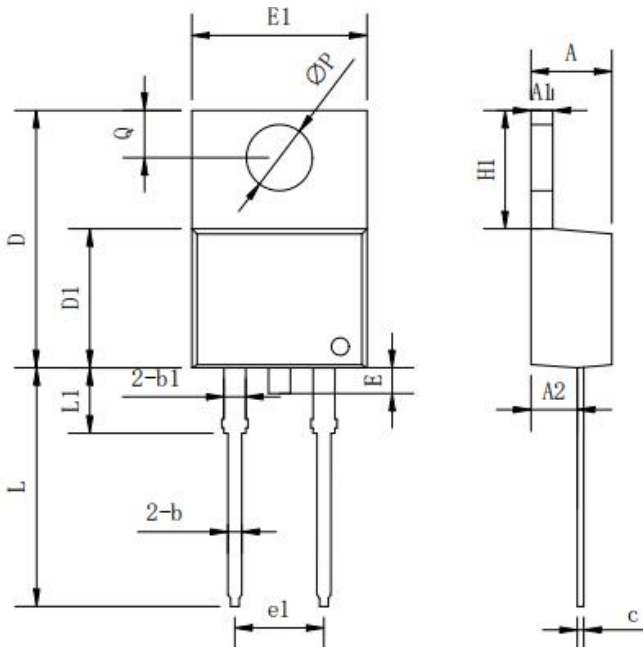
SYMBOL	Millimeters	
	Min.	Max.
A	6.80	7.00
B	10.40	10.60
C	2.60	2.80
d	Φ1.45	Φ1.65
E	1.65	1.85
F	7.40	7.60
P0	3.90	4.10
P	7.90	8.10
P1	1.90	2.10
W	15.90	16.30

Mechanical Dimensions TO-220-Isolation



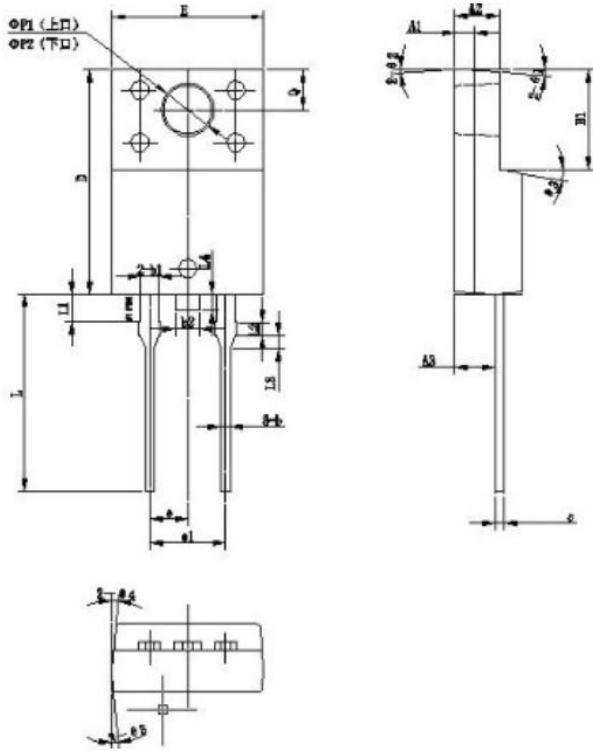
Symbol	Dimensions in millimeters		
	Min.	Typical	Max.
A	9.7	-	10.4
B	2.5	-	3
C	3.5	-	3.9
D	0.7	-	0.92
E	3.72	-	3.95
F	14.51	-	15.55
G	12.95	-	13.9
H	4.95	-	5.19
I	4.38	-	4.65
J	1.15	-	1.36
K	5.86	-	6.38
L	2.35	-	2.85
M	0.32	-	0.58
N	1.18	-	1.42

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



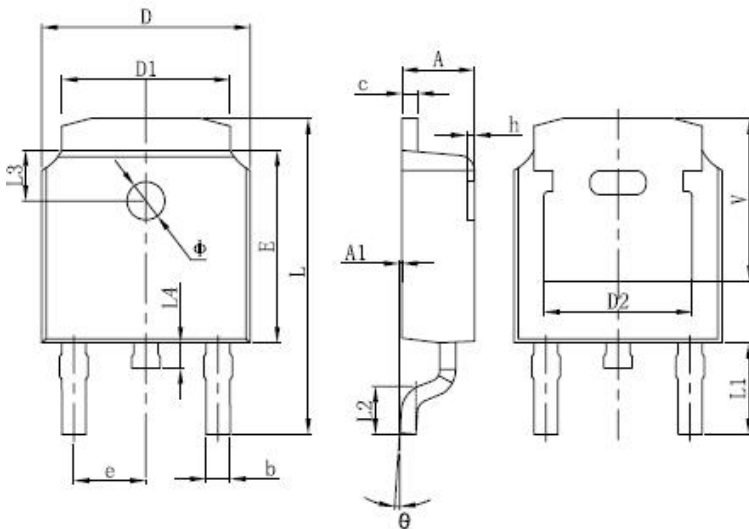
Symbol	Dimensions in millimeters		
	Min.	Typical	Max.
A	3.56	-	4.83
A1	0.51	-	1.40
A2	2.03	-	2.92
b	0.38	-	1.02
b1	1.14	-	1.78
c	0.31	-	0.61
D	14.22	-	16.51
D1	8.38	-	9.42
E	-	-	1.78
E1	9.65	10.16	10.67
e1	-	5.08	-
H1	5.84	-	6.86
L	12.70	-	14.73
L1	-	-	6.35
ΦP	-	3.56	-

Mechanical Dimensions 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
e		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°	

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	-	-

Technical Data
Data Sheet N2362, REV.C



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