

S3D50065D1 S3D50065G S3D50065H S3D50065F 650V SIC POWER SCHOTTKY RECTIFIERS

Description


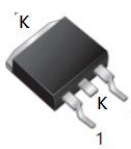
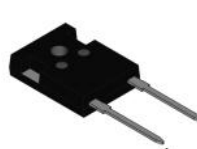
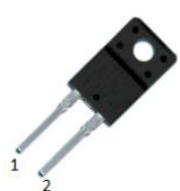

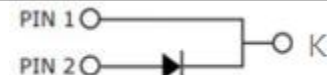
This 650V 50A diode is a high voltage Schottky rectifier that has very low total conduction losses and very stable switching characteristics over temperature extremes. The S3D50065D1/S3D50065G/S3D50065H/S3D50065F are ideal for energy sensitive, high frequency applications in challenging environments.

Applications

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

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

S3D50065D1	S3D50065G	S3D50065H	S3D50065F
			
TO-247AD (TO-247-3)	D ² PAK (TO-263-2)	TO-247AC (TO-247-2)	ITO-220AC (TO-220MF-2L)
			

Maximum Ratings:

Characteristics	Symbol	Condition	Max.	Units
Peak Repetitive Reverse Voltage	V _{RRM}	-	680	V
Working Peak Reverse Voltage	V _{RWM}	-	680	V
DC Blocking Voltage	V _{DC}	-	680	V
Average Rectified Forward Current	I _{F(AV)1}	T _C = 25°C	112	A
	I _{F(AV)2}	T _C = 137°C	50	A
Repetitive Peak Forward Surge Current	I _{FRM1}	10ms, Half Sine pulse, T _C = 25°C	121	A
	I _{FRM2}	10ms, Half Sine pulse, T _C = 110°C	68	A
Peak One Cycle Non-Repetitive Surge Current	I _{FSM1}	10ms, Half Sine pulse, T _C = 25°C	300	A
	I _{FSM2}	10ms, Half Sine pulse, T _C = 110°C	209	A

- China - Germany - Korea - Singapore - United States •
- <http://www.smc-diodes.com> - sales@smc-diodes.com •

Electrical Characteristics:

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	V _{F1}	@ 50A, Pulse, T _J = 25 °C	1.55	1.7	V
	V _{F2}	@ 50A, Pulse, T _J = 175 °C	2.2	2.4	V
Reverse Current at DC condition*	I _{R1}	@V _R = rated V _R T _J = 25 °C	1	40	uA
Reverse Current *	I _{R2}	@V _R = rated V _R T _J = 175 °C	10	60	uA
Junction Capacitance	C _T	V _R =0V, T _J =25°C, f=100MHz	3120	-	pF
Reverse Recovery Charge	Q _c	I _F = 50A, di/dt = 200A/μs V _R = 400 V, T _J =25°C	193.4	-	nC
Capacitance Stored Energy	E _c	V _R = 400 V, T _J =25°C	47.37	-	μJ

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

Thermal-Mechanical Specifications:

Characteristics	Symbol	S3D50065G	S3D50065D1	S3D50065H	S3D50065F	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}	0.75	0.70(per leg) 0.35(both leg)	0.76	2	°C/W

Ordering Information

Device	Package	Shipping
S3D50065D1	TO-247AD(TO-247-3)	25pcs /tube
S3D50065G	D2PAK(TO-263-2)	800pcs /reel
S3D50065H	TO-247AC(TO-247-2)	25pcs /tube
S3D50065F	ITO-220AC(TO-220MF-2L)	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

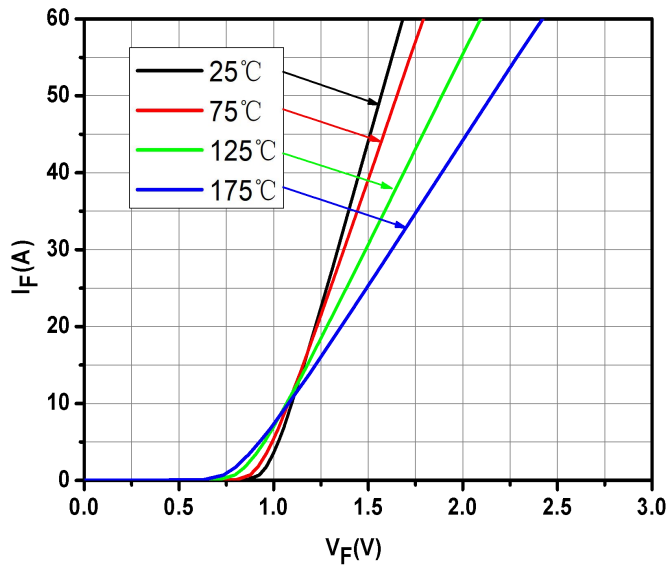


Fig.1-Typical Forward Voltage Characteristics

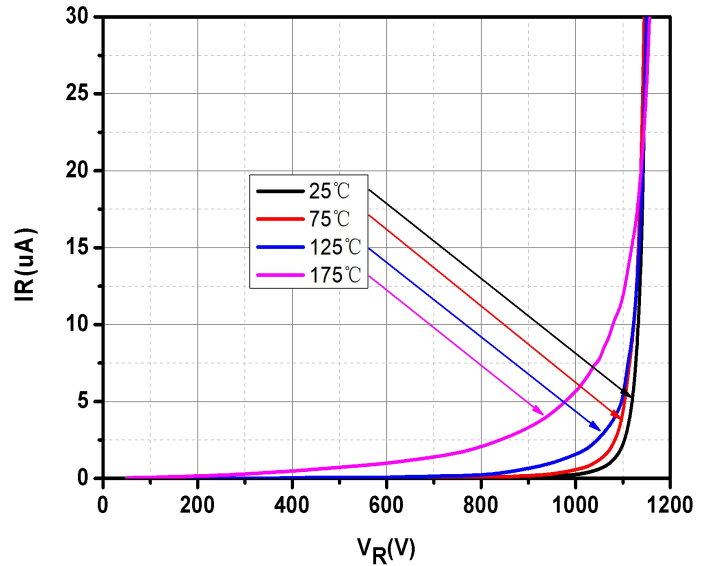


Fig.2-Typical Reverse Characteristics

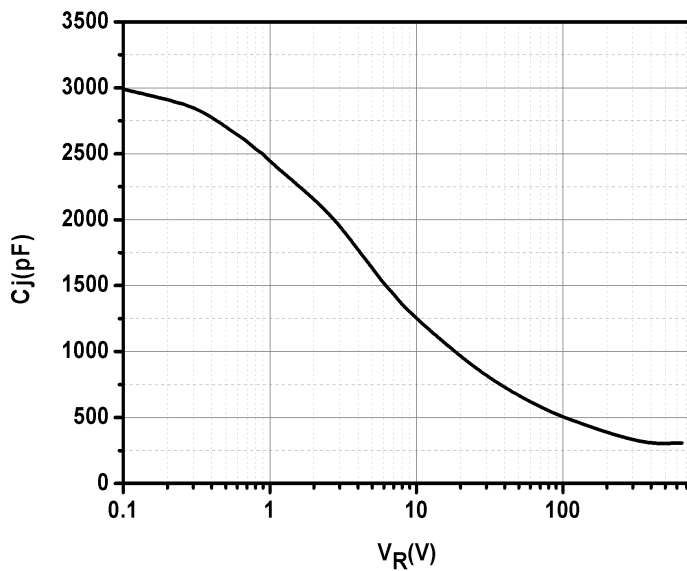


Fig.3-Capacitance vs. Reverse Voltage

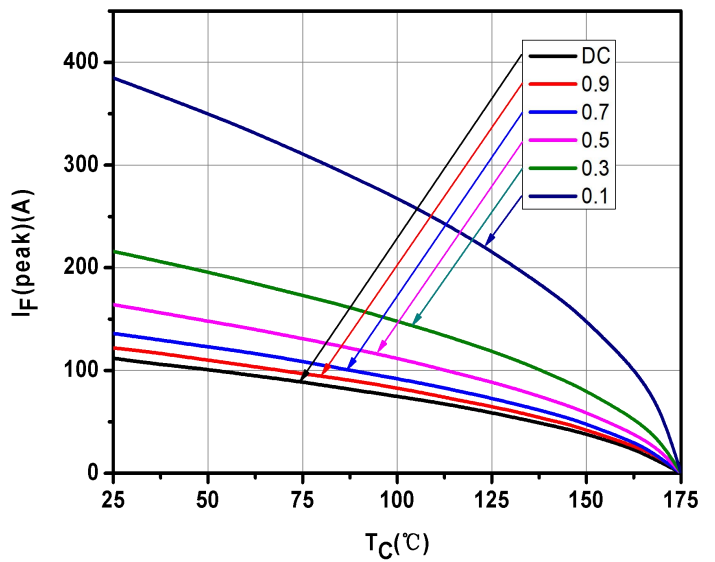


Fig.4-Current Derating

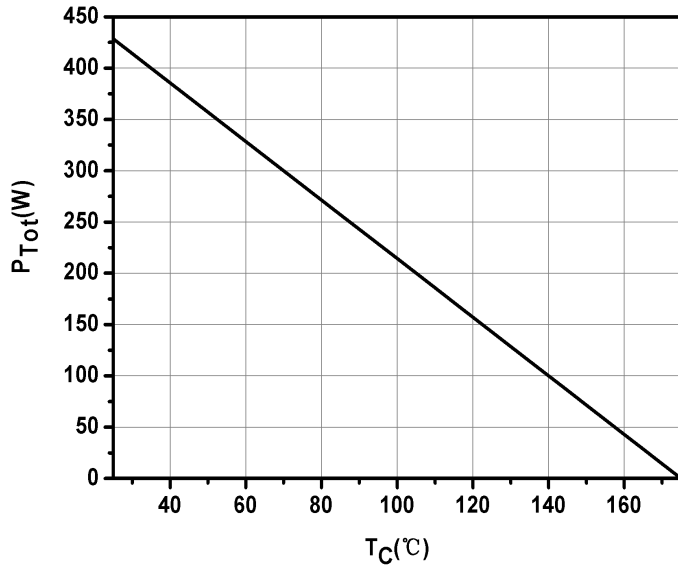


Fig.5-Power Derating

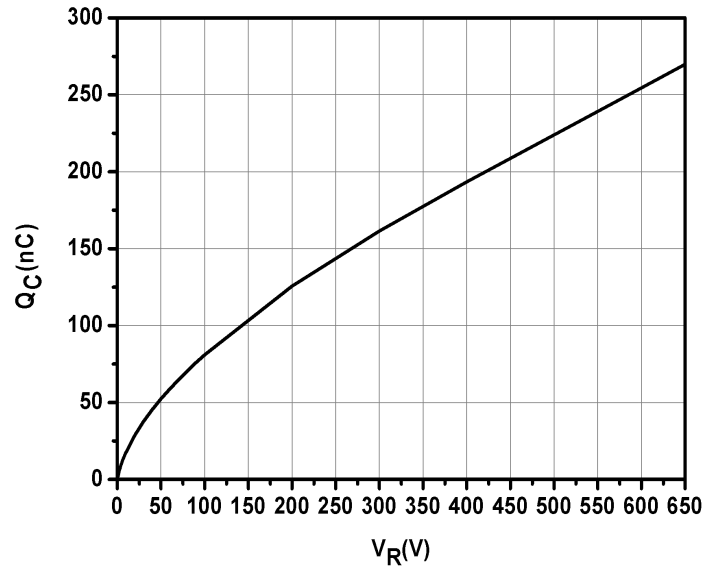


Fig.6-Total Capacitance Charge vs. Reverse Voltage

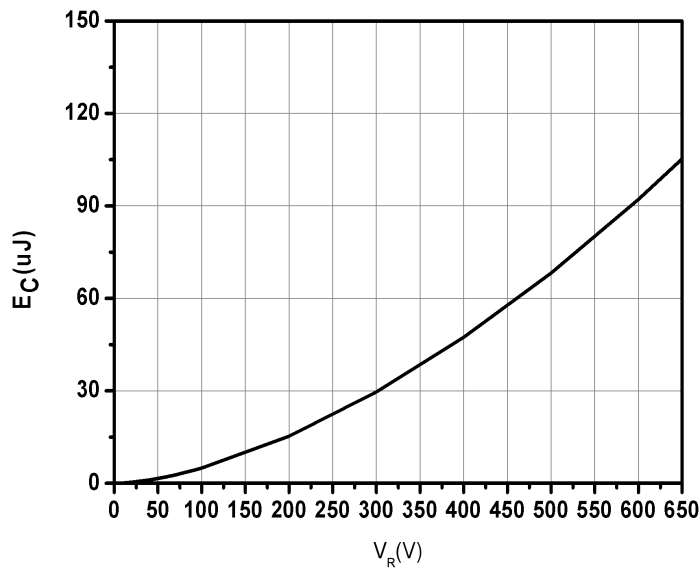
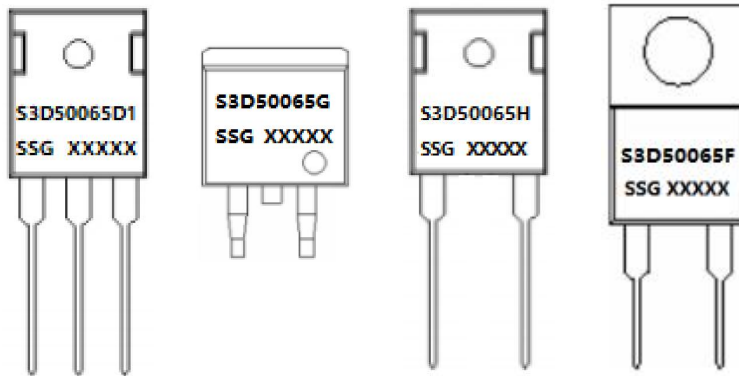


Fig.7-Capacitance Stored Energy

Marking Diagram

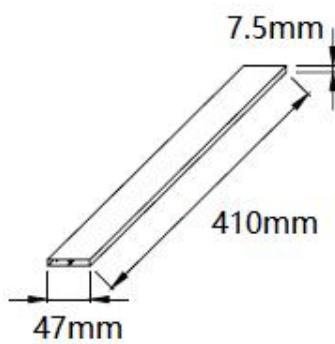


Where XXXXX is YYWWL

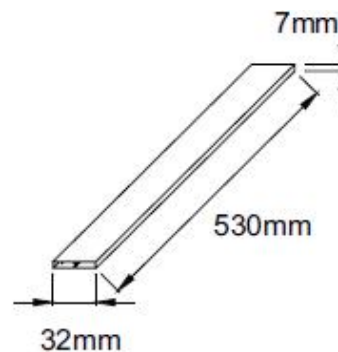
S3D = Device Type
D1/G/H/F = Package type
50 = Forward Current (50A)
065 = Reverse Voltage (650V)
SSG = SSG
YY = Year
WW = Week
L = Lot Number

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

Tube Specification

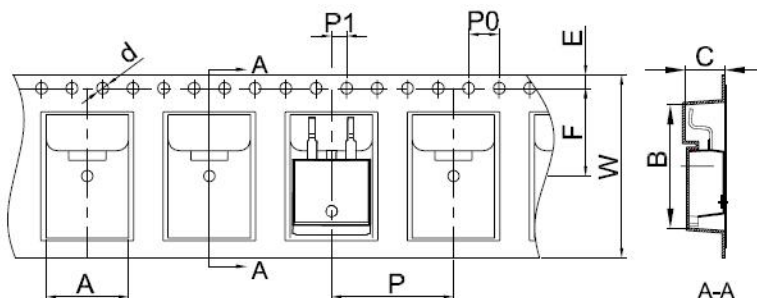


(TO-247-2/TO-247-3)



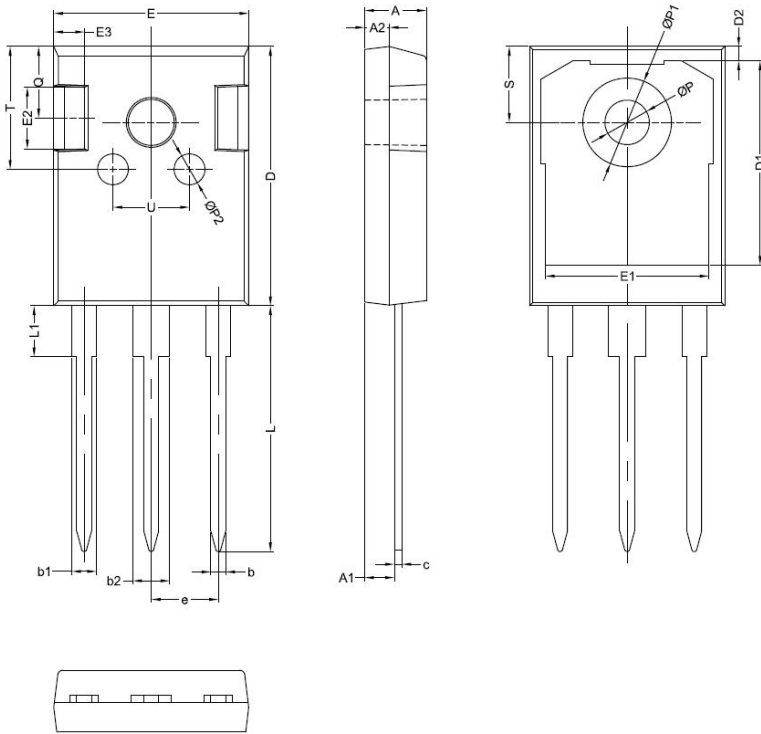
(TO-220MF-2L)

Carrier Tape & Reel Specification



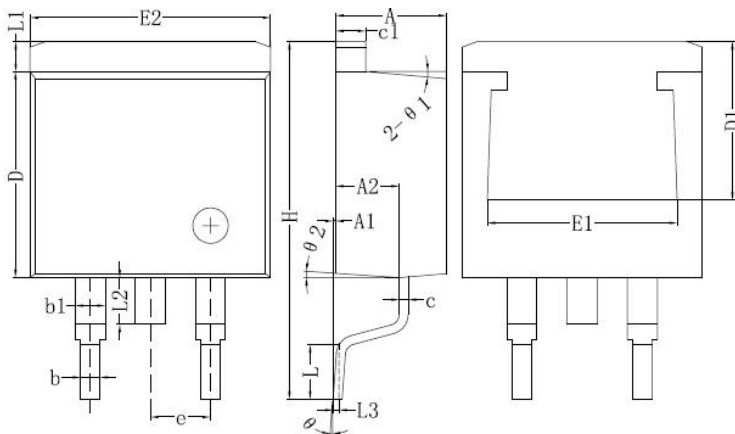
SYMBOL	Millimeters	
	Min.	Max.
A	10.70	10.90
B	16.03	16.23
C	5.11	5.31
d	1.45	1.65
E	1.65	1.85
F	11.40	11.60
P0	3.90	4.10
P	15.90	16.10
P1	1.90	2.10
W	23.90	24.30

Mechanical Dimensions TO-247AD



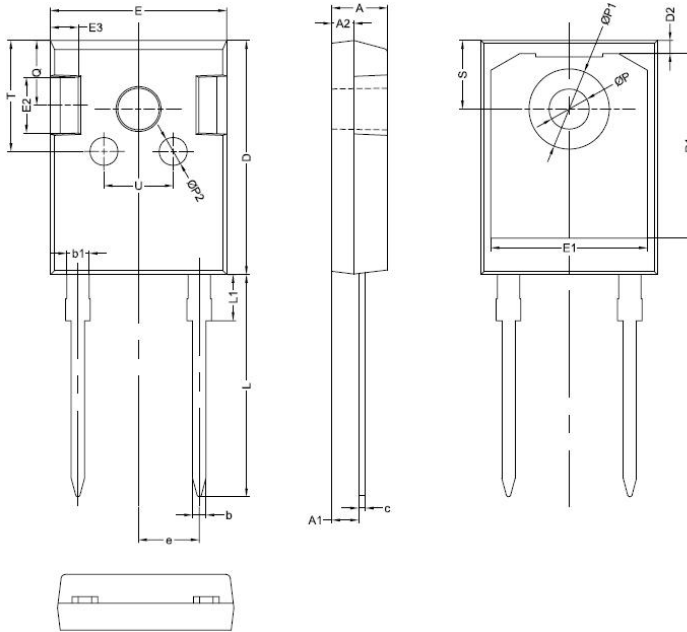
SYMBOL	Millimeters		
	MIN.	TYP.	MAX.
A	4.80		5.20
A1	2.00		2.75
A2	1.90		2.10
b	1.00		1.40
b1	1.80		2.40
b2	2.80		3.40
c	0.40		0.75
D	19.80		21.20
D1		16.55	
D2		1.20	
E	15.20		16.00
E1		13.30	
E2		5.00	
E3		2.50	
e	5.20		5.70
L	13.90		20.70
L1	3.70		4.30
P	3.50		3.70
P1	7.1		7.40
P2		2.50	
Q		5.80	
S	6.05		6.25
T		10.00	
U		6.20	

Mechanical Dimensions D²PAK(TO-263-2)



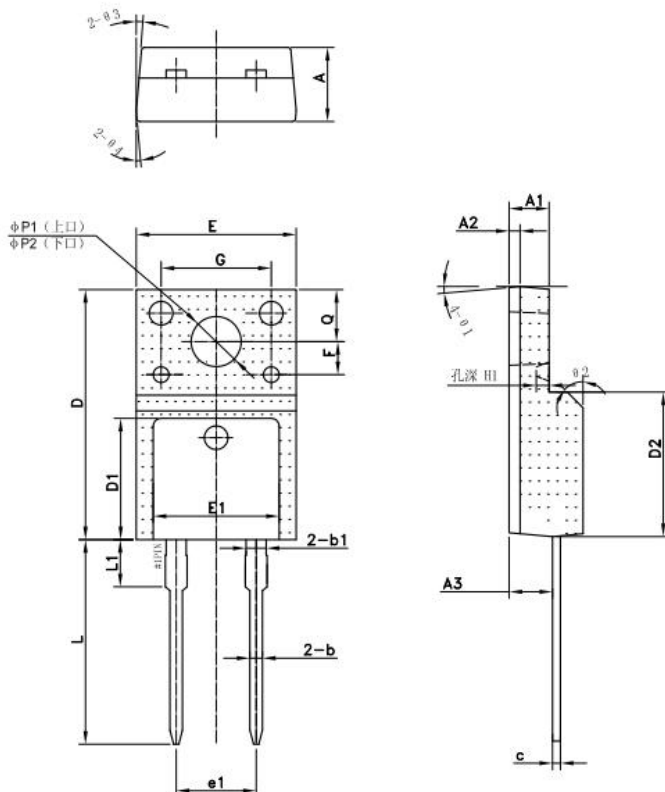
Symbol	Dimensions in millimeters	
	Min.	Max.
A	4.06	4.83
A1	0	0.26
b	0.51	0.99
b1	1.14	1.78
c	0.31	0.74
c1	1.14	1.65
D	8.38	9.65
D1	6.4	
E1	6.22	
E2	9.65	10.67
e	2.54BSC	
H	14.6	15.88
L	1.78	2.8
L1	-	1.68
L2	-	2.2
L3	0.255BSC	
Θ	0	8°

Mechanical Dimensions TO-247AC



SYMBOL	Millimeters		
	MIN.	TYP.	MAX.
A	4.80	5.00	5.20
A1	2.20	2.41	2.61
A2	1.90	2.00	2.10
b	1.10	1.20	1.35
b1	1.80	2.00	2.20
c	0.50	0.60	0.75
D	20.30	21.00	21.20
D1		16.58	
D2		1.17	
E	15.60	15.80	16.00
E1		14.02	
E2		5.00	
E3		2.50	
e		5.44	
L	19.42	19.92	20.42
L1		4.13	
P	3.50	3.60	3.70
P1	7.1	7.19	7.40
P2		2.50	
Q		5.80	
S	6.05	6.15	6.25
T		10.00	
U		6.20	

Mechanical Dimensions ITO-220AC(TO-220MF-2L)



Symbol	Dimensions in millimeters		
	Min.	Typical	Max.
A	4.50	4.70	4.90
A1	2.34	2.54	2.74
A2		0.70	
A3	2.56	2.76	2.96
b	0.70	0.80	0.95
b1		1.28	
c	0.45	0.50	0.65
D	15.67	15.87	16.07
D1		7.70	
D2		9.12	
E	9.96	10.16	10.36
E1		8.00	
e1		5.08	
F		2.1	
G		7	
H1		0.81	
L	12.48	12.98	13.20
L1		2.93	
4>P1 (上口)	2.98	3.18	3.38
4>P2 (下口)	3.20	3.40	3.60
Q	3.10	3.30	3.50
e 1		5°	
02		45°	
03		5°	
e 4		5°	

Technical Data
Data Sheet N2450, REV.C



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