

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	$I_{F(AV)1}$	$T_c=25^{\circ}\text{C}$	31	A
	$I_{F(AV)2}$	$T_c=135^{\circ}\text{C}$	14	A
	$I_{F(AV)3}$	$T_c=150^{\circ}\text{C}$	10	A
Repetitive Peak Forward Surge Current	I_{FRM1}	10ms, Half Sine pulse, $T_j=25^{\circ}\text{C}$	55	A
	I_{FRM2}	10ms, Half Sine pulse, $T_j=110^{\circ}\text{C}$	40	A
Peak One Cycle Non-Repetitive Surge Current	I_{FSM1}	10ms, Half Sine pulse, $T_j=25^{\circ}\text{C}$	100	A
	I_{FSM2}	10ms, Half Sine pulse, $T_j=110^{\circ}\text{C}$	65	A
Non-Repetitive Peak Forward Surge Current	$I_{F,Max1}$	10 μs . Pulse, $T_j=25^{\circ}\text{C}$	995	A
	$I_{F,Max2}$	10 μs . Pulse, $T_j=110^{\circ}\text{C}$	685	A
Power Dissipation	P_{tot1}	$T_j=25^{\circ}\text{C}$	103	W
	P_{tot2}	$T_j=110^{\circ}\text{C}$	45	W

Electrical Characteristics:

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	V _{F1}	@ 10A, Pulse, T _J = 25°C	1.45	1.7	V
	V _{F2}	@ 10A, Pulse, T _J = 175 °C	1.65	2.0	V
Reverse Current*	I _{R1}	@V _R = rated V _R T _J = 25 °C	0.7	40	uA
	I _{R2}	@V _R = rated V _R T _J = 175°C	7	160	uA
Junction Capacitance	C _T	V _R =0V, T _J =25°C, f=1MHz	680	-	pF
Reverse Recovery Charge	Q _c	I _F = 10A, di/dt = 200A/μs V _R = 400 V, T _J =25°C	42.4	-	nC
Capacitance Stored Energy	E _c	V _R = 400 V, T _J =25°C	10.4	-	μJ

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

Thermal-Mechanical Specifications:

Characteristics	Symbol	S3D10065A	S3D10065F	S3D10065E	S3D10065G	S3D10065I	S3D10065D1	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}	1.4	4	1.5	1.65	3.3	0.84(per leg) 0.42(both leg)	°C/W

Ordering Information

Device	Package	Shipping
S3D10065A	TO-220AC(TO-220-2)	50pcs / tube
S3D10065F	ITO-220AC(TO-220-F2)	50pcs / tube
S3D10065E	DPAK(TO-252-2)	2500pcs / reel
S3D10065ETR	DPAK(TO-252-2)	2500pcs / reel
S3D10065G	D2PAK(TO-263-2)	800pcs / reel
S3D10065GTR	D2PAK(TO-263-2)	800pcs / reel
S3D10065I	TO-220-Isolation	50pcs / tube
S3D10065H	TO-247AC(TO-247-2)	25pcs / tube
S3D10065D1	TO-247AD(TO-247-3)	25pcs / 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

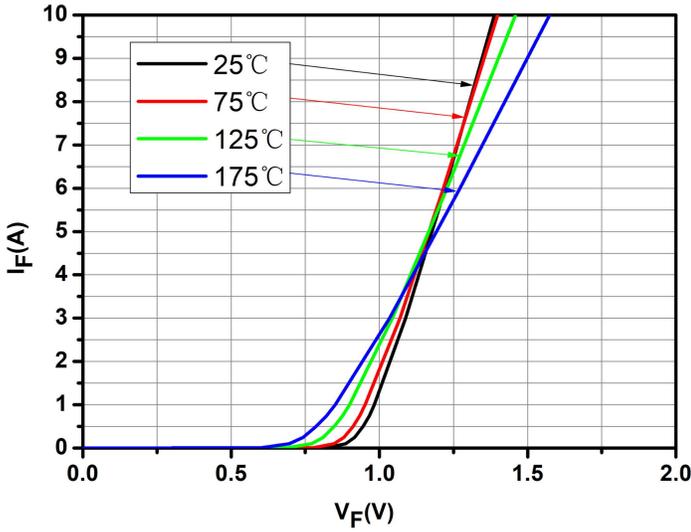


Fig.1-Typical Forward Voltage

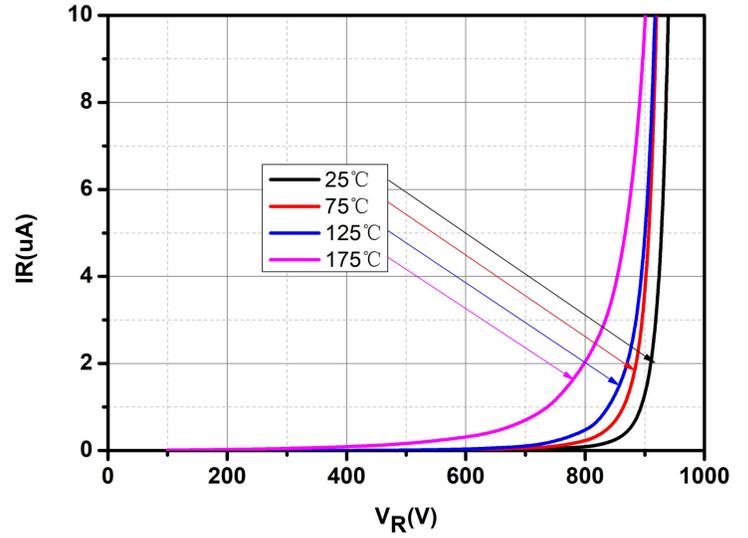


Fig.2-Typical Reverse Characteristics

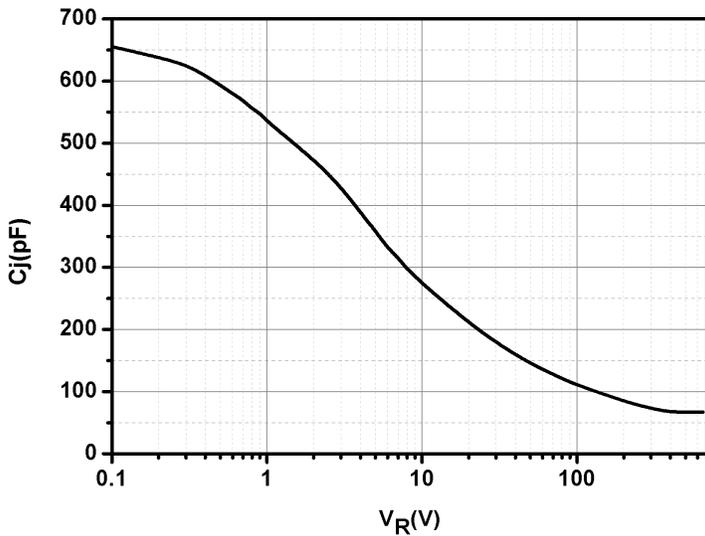


Fig.3-Capacitance vs. Reverse Voltage

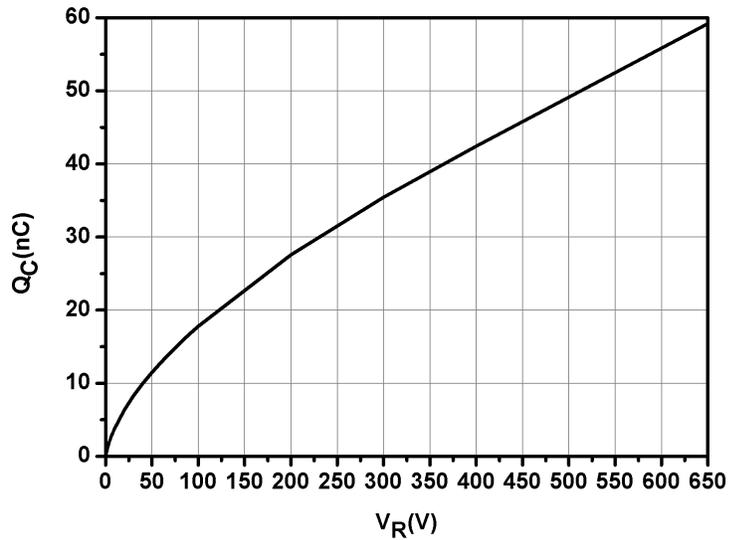


Fig.4-Total Capacitance Charge vs. Reverse Voltage

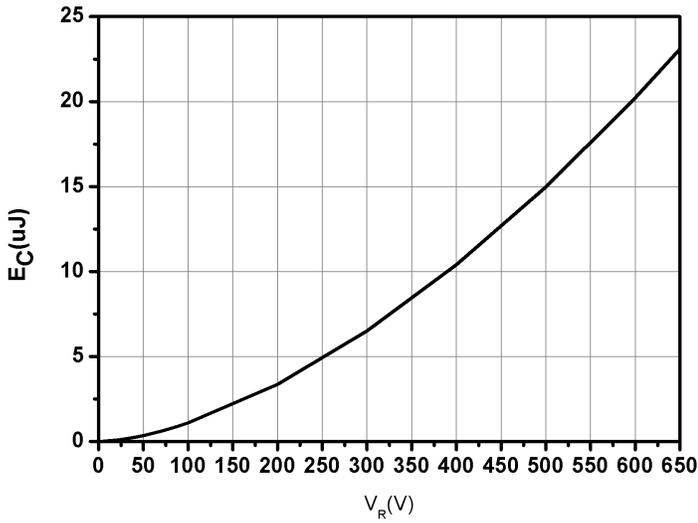


Fig.5-Capacitance Stored Energy

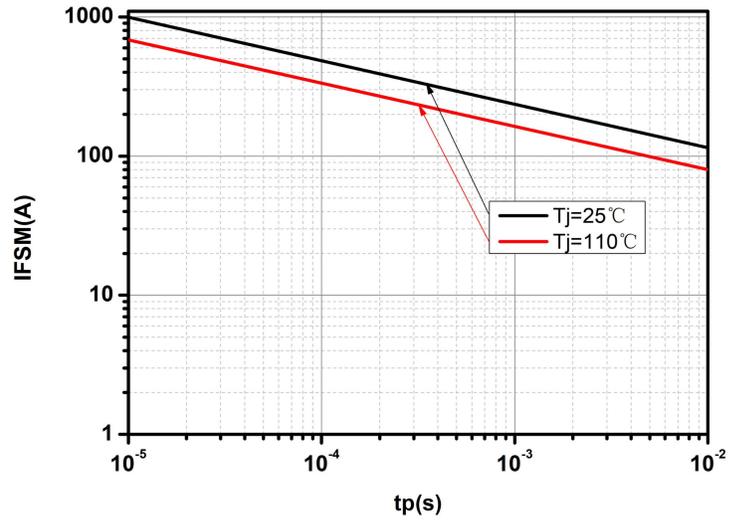


Fig.6-Non-repetitive peak forward surge current versus pulse duration (sinusoidal waveform)

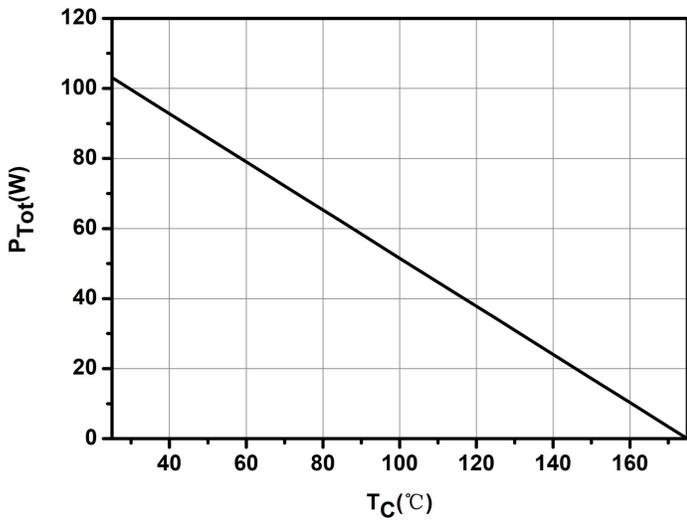


Fig.7-Power Derating

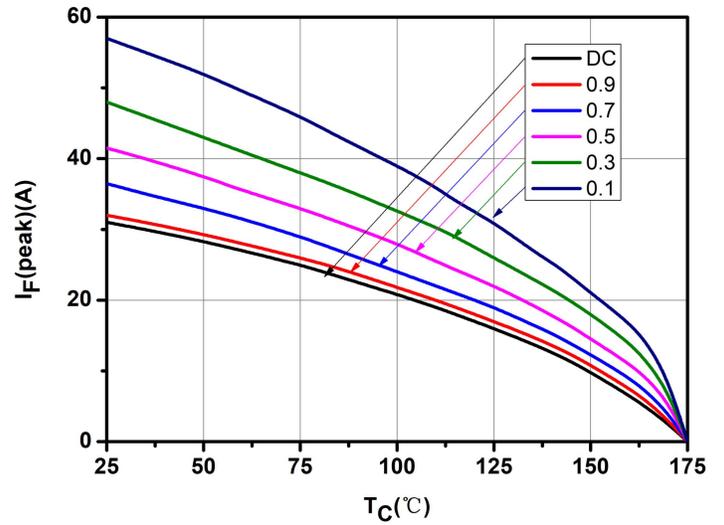
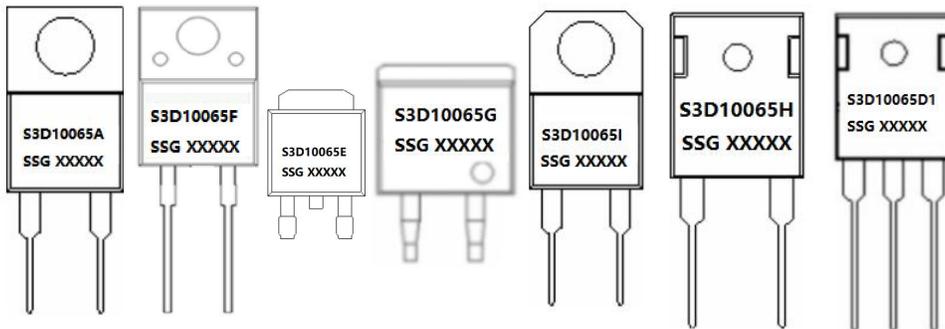


Fig.8-Current Derating

Marking Diagram

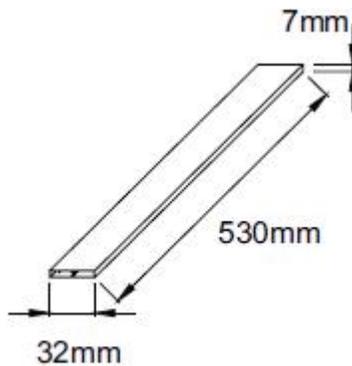


Where XXXXX is YYWWL

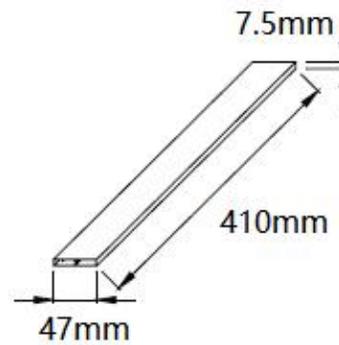
S3D = Device Type
A/F/E/G/I/H/D1 = Package type
10 = Forward Current (10A)
065 = Reverse Voltage (650V)
SSG = SSG
YY = Year
WW = Week
L = Lot Number

Cautions: Molding resin
Epoxy resin UL94V-0

Tube Specification

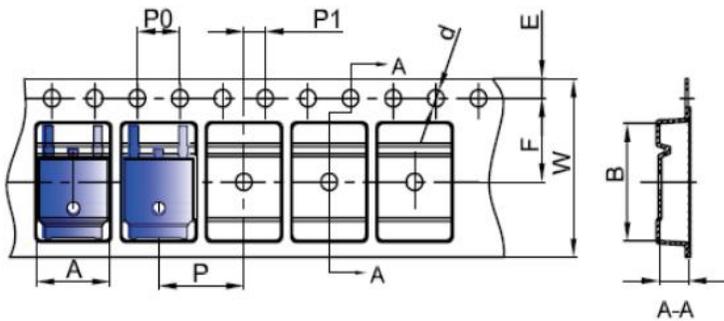


(TO-220-2/TO-220-F2/TO-220-Isolation)



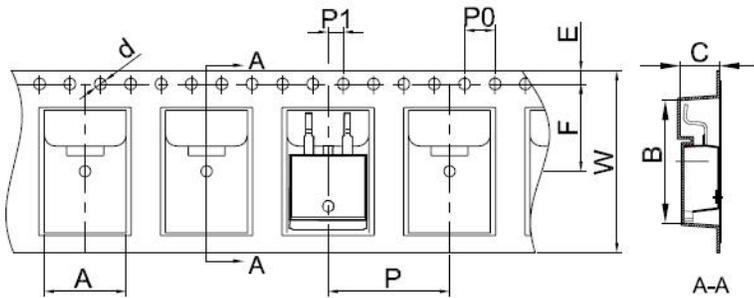
(TO-247-3/TO-247-2)

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



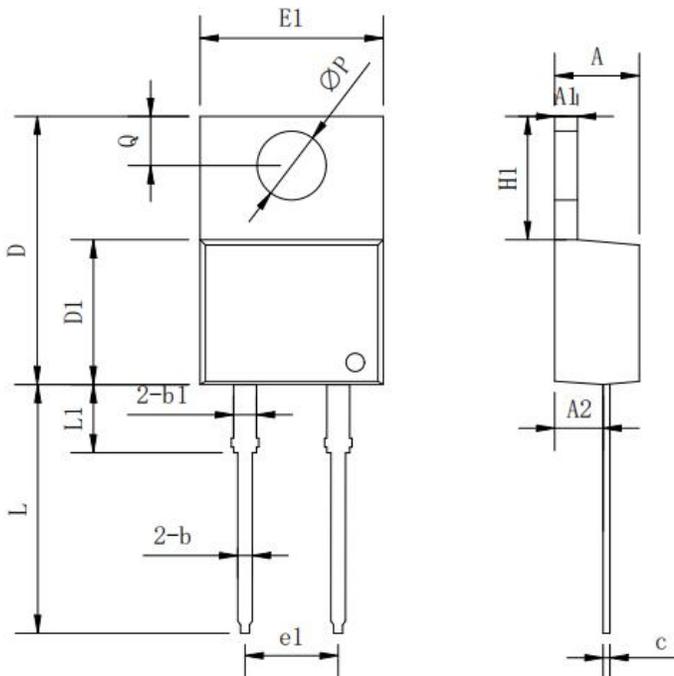
SYMBOL	Millimeters	
	Min.	Max.
A	6.80	7.00
B	10.40	10.60
C	2.60	2.80
d	φ1.45	φ1.65
E	1.65	1.85
F	7.40	7.60
P0	3.90	4.10
P	7.90	8.10
P1	1.90	2.10
W	15.90	16.30

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



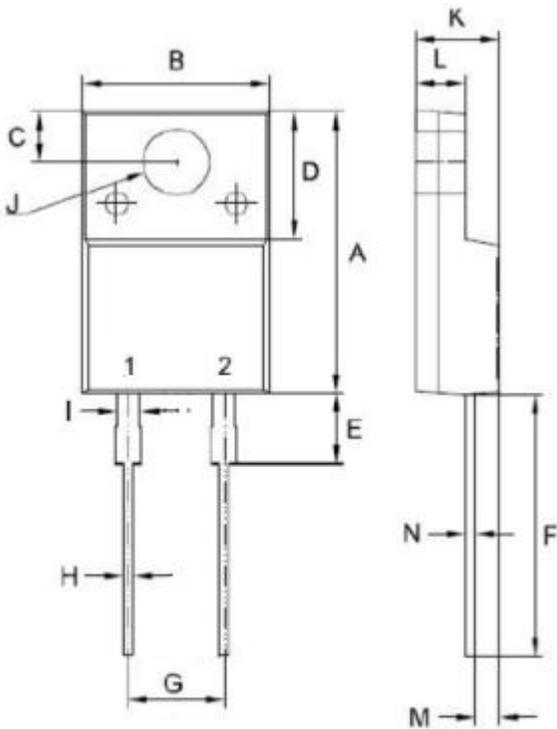
SYMBOL	Millimeters	
	Min.	Max.
A	10.70	10.90
B	16.03	16.23
C	5.11	5.31
d	1.45	1.65
E	1.65	1.85
F	11.40	11.60
P0	3.90	4.10
P	15.90	16.10
P1	1.90	2.10
W	23.90	24.30

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



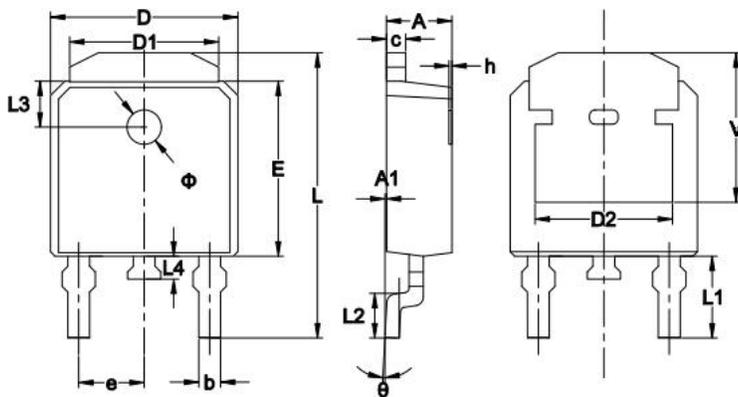
Symbol	Dimensions in millimeters		
	Min.	Typical	Max.
A	3.56	-	4.83
A1	0.51	-	1.40
A2	2.03	-	2.92
b	0.38	-	1.02
b1	1.14	-	1.78
c	0.31	-	0.61
D	14.22	-	16.51
D1	8.38	-	9.42
E1	9.65	10.16	10.67
e1	-	5.08	-
H1	5.84	-	6.86
L	12.70	-	14.73
L1	-	-	6.35
φP	-	3.56	-
Q	2.54	-	3.43

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



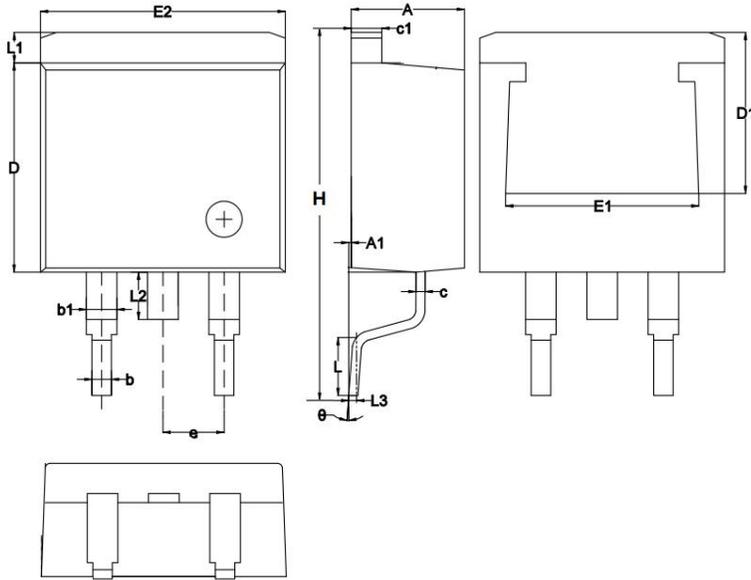
SYMBOL	Millimeters		
	MIN.	TYP.	MAX.
A	14.50	15.30	16.00
B	9.50	10.00	10.50
C	2.50	3.00	3.5
D	6.30	6.80	7.30
E	3.10	3.70	4.30
F	13.00	13.5	14.00
G	4.90	5.10	5.30
H	0.30	0.60	0.90
I	0.90	1.2	1.50
J	3.20	3.50	3.80
K	4.24	4.54	4.84
L	2.30	2.61	2.92
M	1.09	1.29	1.49
N	0.42	0.53	0.63

Mechanical Dimensions DPAK(TO-252-2)



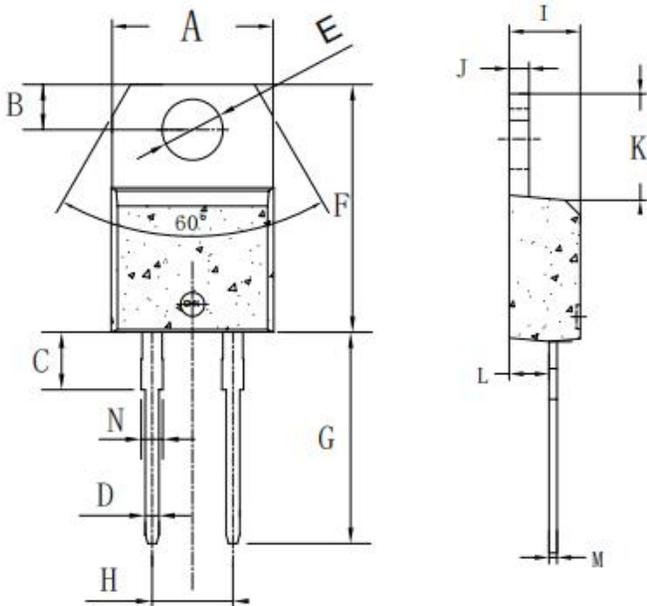
SYMBOL	Dimensions in millimeters		
	Min.	Typ.	Max.
A	2.18	-	2.39
A1	-	-	0.13
b	0.64	-	0.89
c	0.46	-	0.89
D	6.35	-	6.73
D2	4.32	-	-
E	5.97	6.10	6.22
e	2.29BSC		
L	9.40	-	10.41
L2	1.40	1.52	1.78
L4	-	-	1.02
φ	0°	-	10°
V	5.21	-	-

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	8.65
D1	6.40	
E1	6.22	
E2	9.65	10.67
e	2.54BSC	
H	14.60	15.88
L	1.78	2.80
L1	-	1.68
L2	-	2.2
L3	0.255BSC	
θ	0	8°

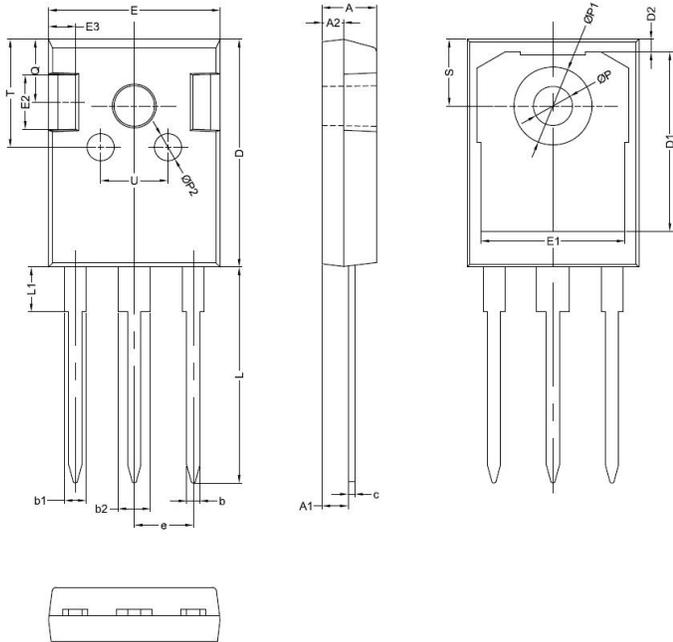
Mechanical Dimensions TO-220-Isolation



Symbol	Dimensions in millimeters		
	Min.	Typical	Max.
A	9.7	-	10.4
B	2.65	-	3.1
C	2.8	-	4.2
D	0.7	-	0.92
E	3.75	-	3.95
F	14.8	-	16.1
G	13.05	-	13.6
H	4.9	-	5.3
I	4.38	-	4.61
J	1.15	-	1.36
K	5.85	-	6.82
L	2.35	-	2.75
M	0.35	-	0.65
N	1.18	-	1.42

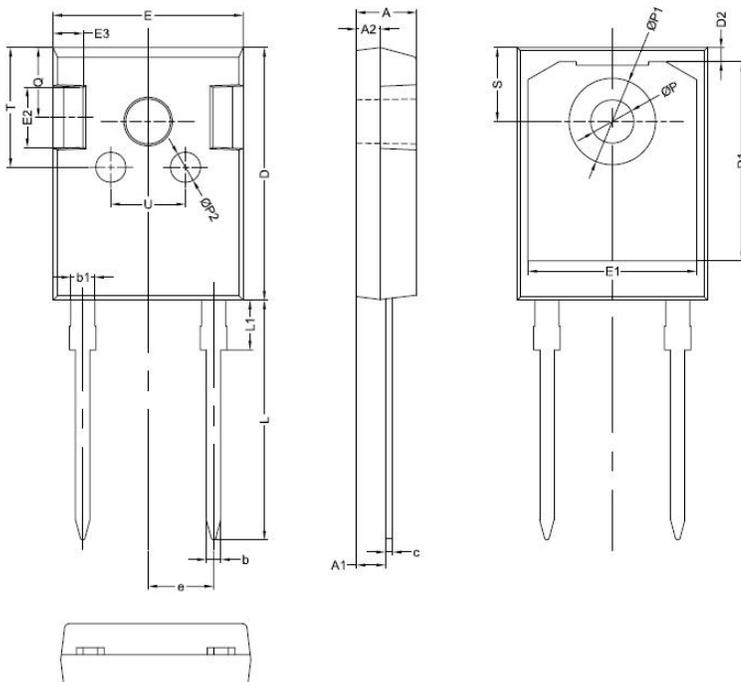
Notes: New Mechanical Dimensions is performed from date code 25041.

Mechanical Dimensions TO-247AD



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	1.40
b1	1.80	2.00	2.20
b2	2.80	3.00	3.20
c	0.50	0.60	0.75
D	20.30	21.00	21.20
D1		16.55	
D2		1.20	
E	15.45	15.80	16.00
E1		13.30	
E2		5.00	
E3		2.50	
e		5.44	
L	19.42	19.92	20.70
L1		4.13	
P	3.50	3.60	3.70
P1	7.1		7.40
P2		2.50	
Q		5.80	
S	6.05	6.15	6.25
T		10.00	
U		6.20	

Mechanical Dimensions TO-247AC(TO-247-2)



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	

Technical Data
Data Sheet N2289, REV.I



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