VSXX065R18BNA

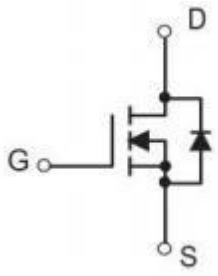
Datasheet

1.8Ω, 650V, N-Channel Power MOSFET VSXX065R18BNA

General Description

$V_{(BR)DSS}$	$R_{DS(ON)\_max}$	I_D
650V	1.8Ω@10V	2.7A

Symbol

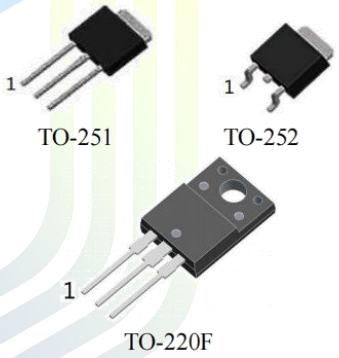


Symbol of VSXX065R18BNA

Features

- Ultra Low $R_{DS(ON)}$
- Fast switching capability
- Robust design with better EAS performance
- Non-automotive Qualified

Package Type



Package Type of VSXX065R18BNA

Application

- High Voltage Application
- LED Lighting Power

Ordering Information

Product Name	Package
VSTJ065R18BNA	TO-251
VSTL065R18BNA	TO-252
VSTD065R18BNA	TO-220F

Absolute Maximum Ratings

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	650	V
Gate-Source Voltage		V_{GSS}	±20	V
Gate-Source Voltage (AC,f>1Hz)			±30	
Continuous Drain Current	T_C= 25 ºC	I_D	2.7	A
Continuous Drain Current	T_C= 125 ºC		1.2	
Pulsed Drain Current Note2		I_{DM}	8.1	
Continuous diode forward current		I_S	2.7	
Diode pulsed current		$I_{S.PULSE}$	8.1	
Single Pulsed Avalanche Energy Note3		E_{AS}	32	mJ
Avalanche Energy, Repetitive Note2		E_{AR}	0.03	
Avalanche Current, Repetitive Note2		I_{AR}	0.1	A
Operating Junction Temperature		T_J	150	ºC

Electrical Characteristics (T_J= 25 ºC, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Statistic Characteristics Note1						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D= 250uA	650			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= 650V, V_{GS}=0V			1	uA
Gate-Body Leakage Current	I_{GSSF}	V_{GS} = 20V, V_{DS}= 0V			100	nA
	I_{GSSR}	V_{GS} = -20V, V_{DS}= 0V			-1	uA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	2.7	3.5	4.3	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D= 1.3A		1.5	1.8	Ω
Dynamic Characteristics Note2						
Input Capacitance	C_{ISS}	V_{DS}=50V		160		pF
Output Capacitance	C_{OSS}	V_{GS}=0V		9		pF
Reverse Transfer Capacitance	C_{RSS}	f=1MHz		4		pF
Gate Resistance	Rg	f=1MHz,open drain		8		Ω
Total Gate Charge	Q_g	V_{DS}=480V V_{GS}=0 to 10V I_D= 1.3A		4.3		nC
Gate-Source Charge	Q_{gs}			1.0		
Gate-Drain Charge	Q_{gd}			2.1		
Gate Plateau Voltage	$V_{plateau}$			5.9		V
Diode Characteristics						
Diode Forward Voltage Note2	V_{SD}	V_{GS}=0V, I_S= 1.3A		0.84	1.1	V

Notes :

1. Absolute maximum ratings are those values beyond which the device could be permanently damaged Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2. Repetitive Rating: Pulse width limited by maximum junction temperature
3. I_{AS}= 0.1A, V_{DD}= 60V, R_G= 25Ω, Starting T_J= 25°C

Typical Performance Characteristics

Figure 1: Power Dissipation

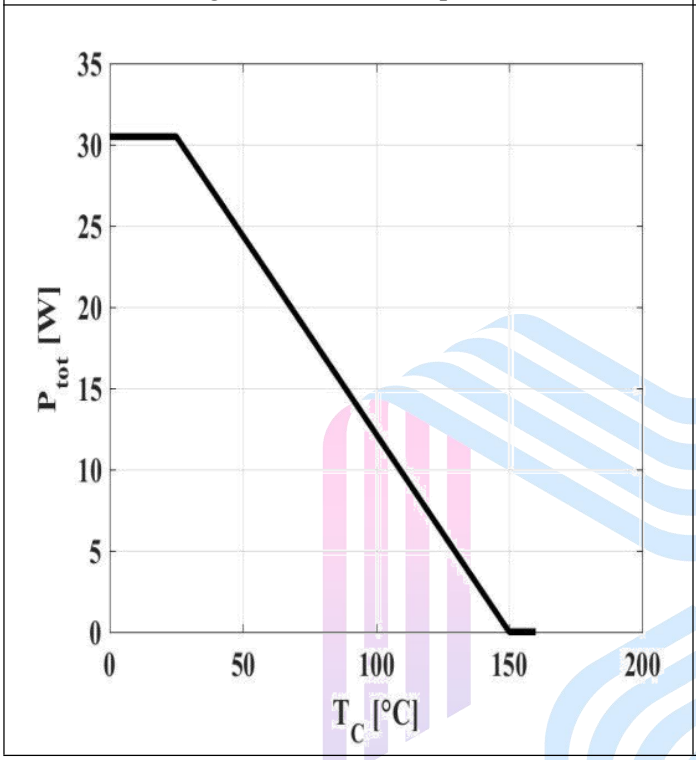


Figure 2: Max Transient Thermal Impedance

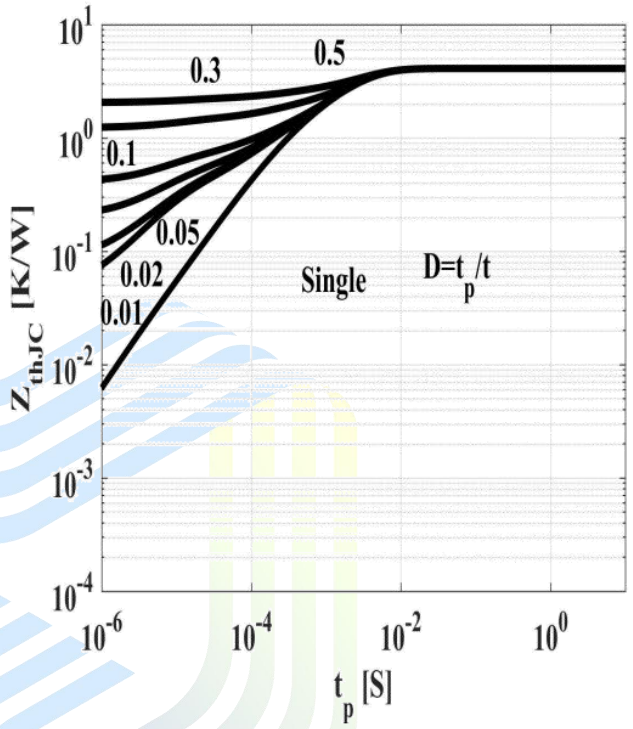


Figure 3: On-Resistance vs. Temperature

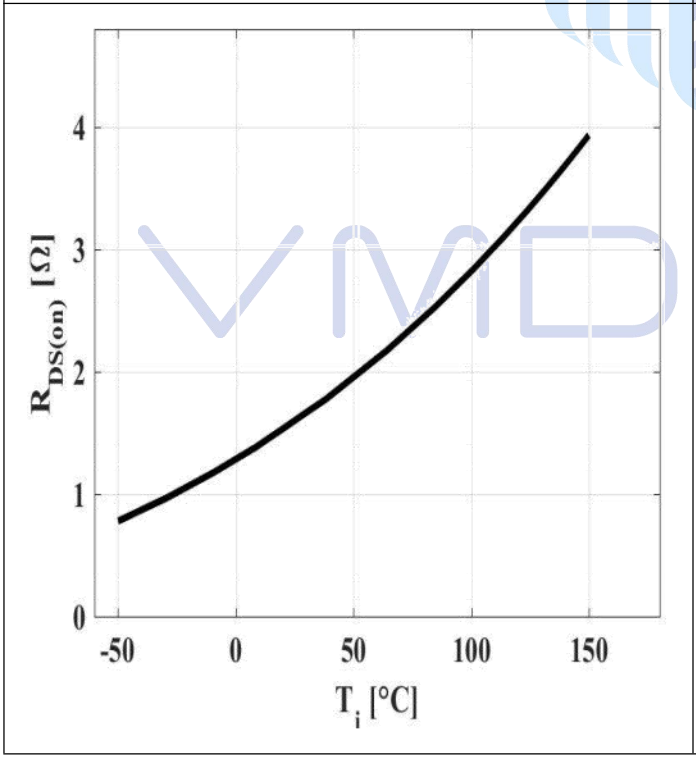


Figure 4: Typ. Gate Charge

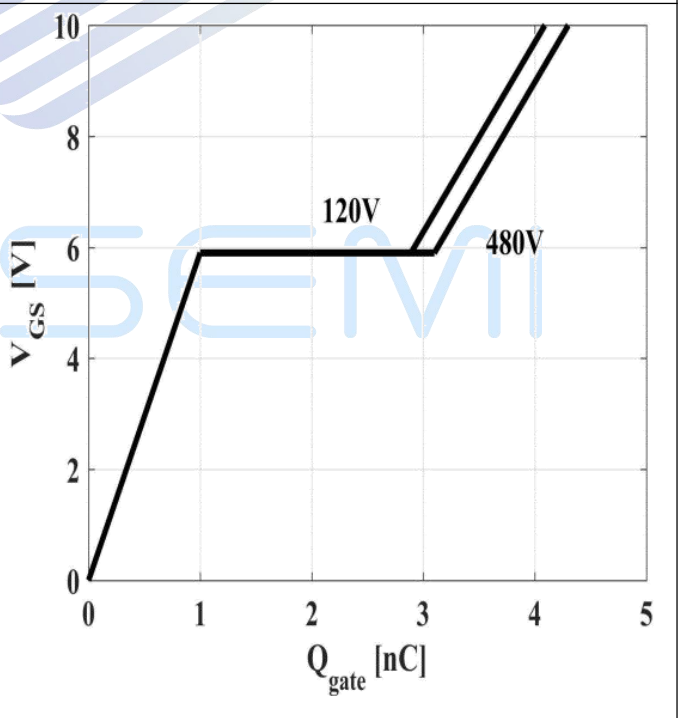


Figure 5: Drain Source Breakdown Voltage

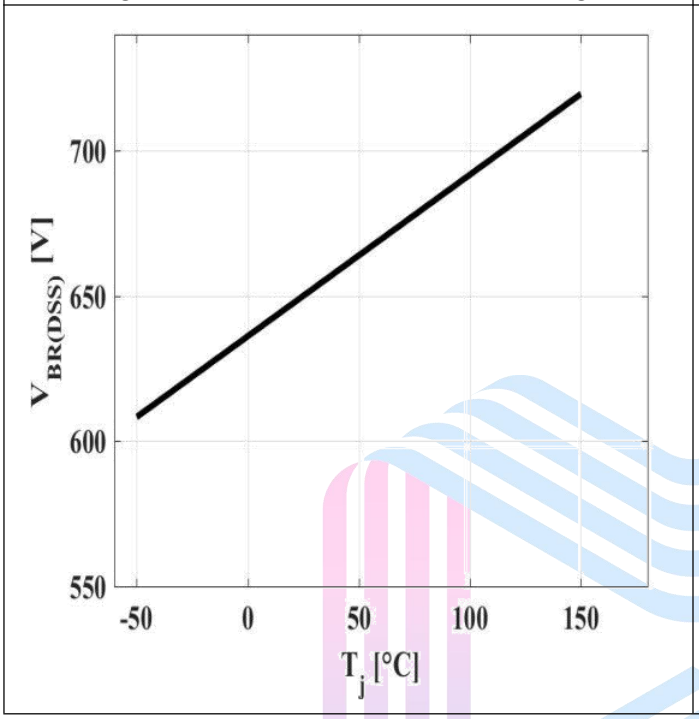


Figure 6: Avalanche Energy

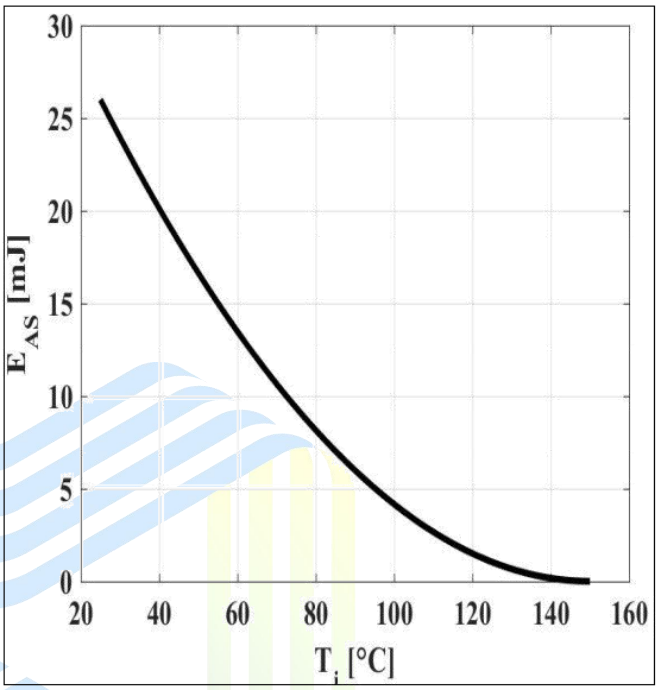


Figure 7: Typ. Capacitance

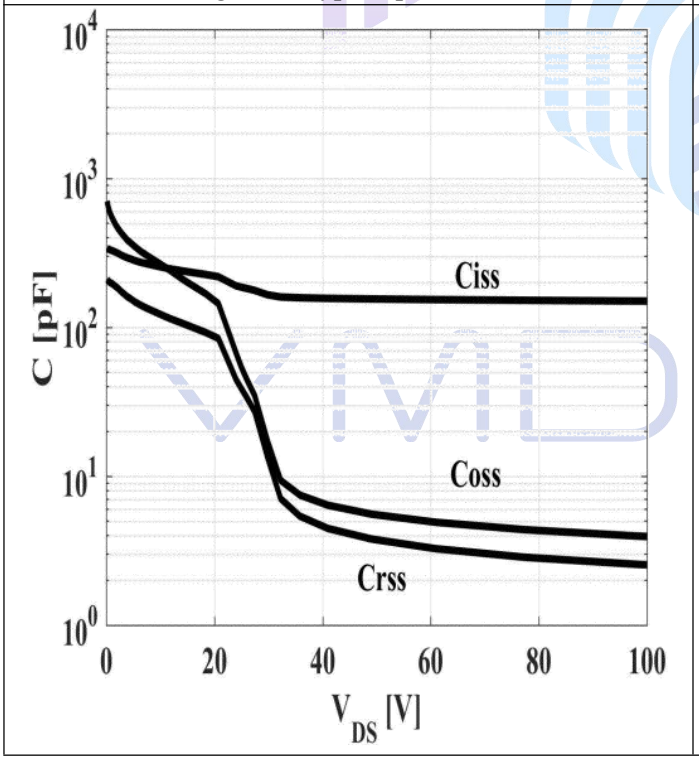
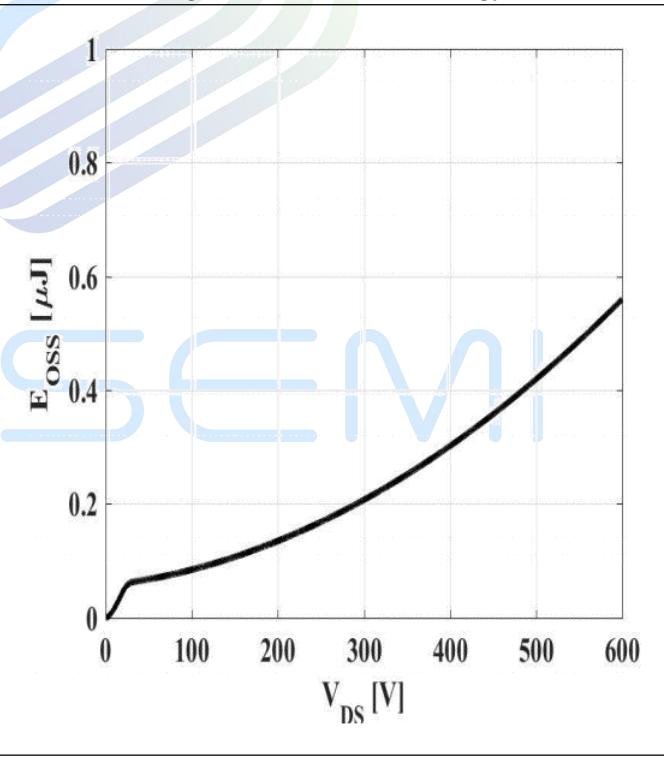
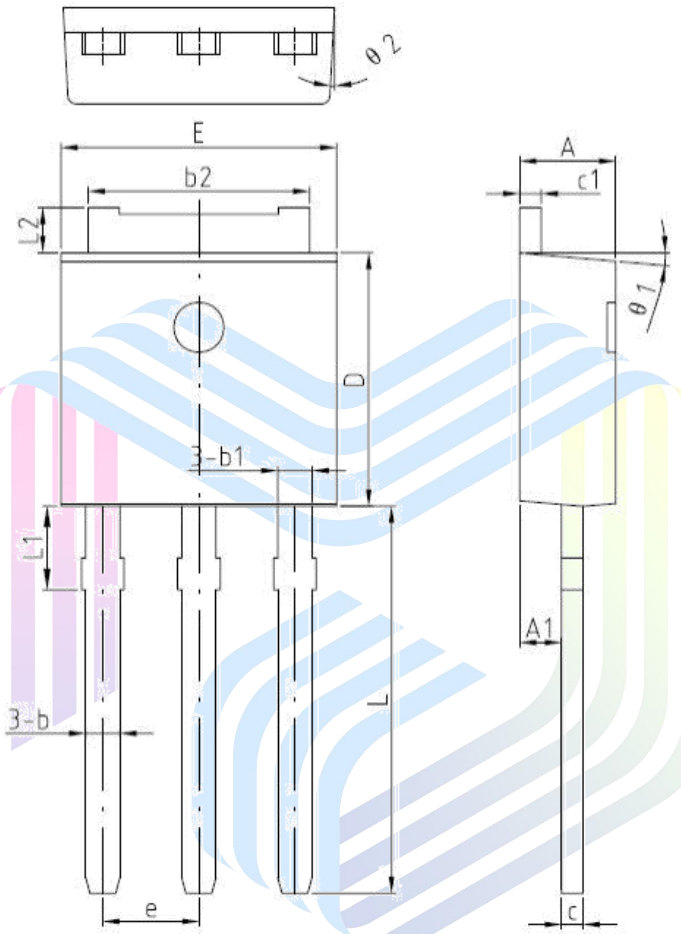


Figure 8: Coss Stored Energy



Mechanical Dimensions:

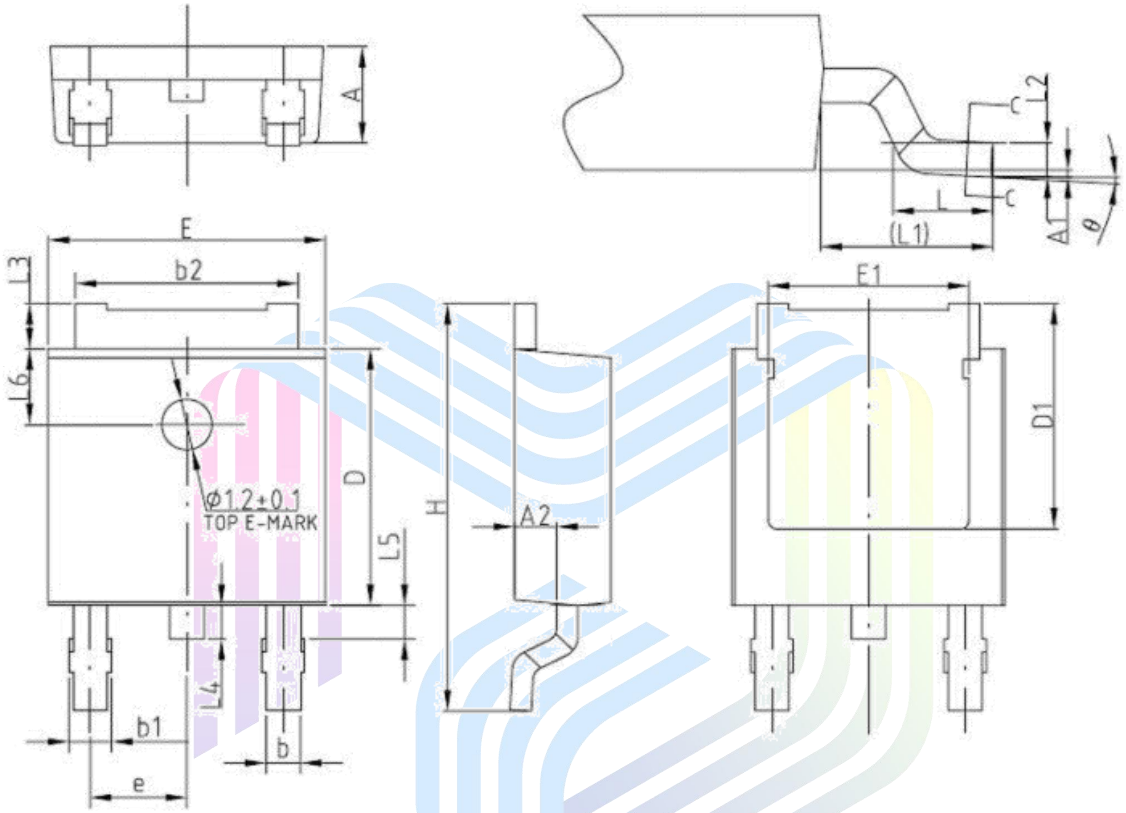
TO-251 Package Information



Symbol	Dimensions(mm)		
	Min.	Typ.	Max.
A	2.20	2.30	2.40
A1	0.90	1.01	1.17
b	0.50	-	0.91
b1	-	0.81	-
b2	5.13	5.33	5.46
c	0.46	0.50	0.60
c1	0.46	0.50	0.60
D	5.95	6.10	6.25
E	6.45	6.60	6.75
e	2.286(BSC)		
L	9.00	9.30	9.60
L1	-	2.00	-
L2	0.90	-	1.25
θ1	-	5°	-
θ2	-	3°	-

Mechanical Dimensions:

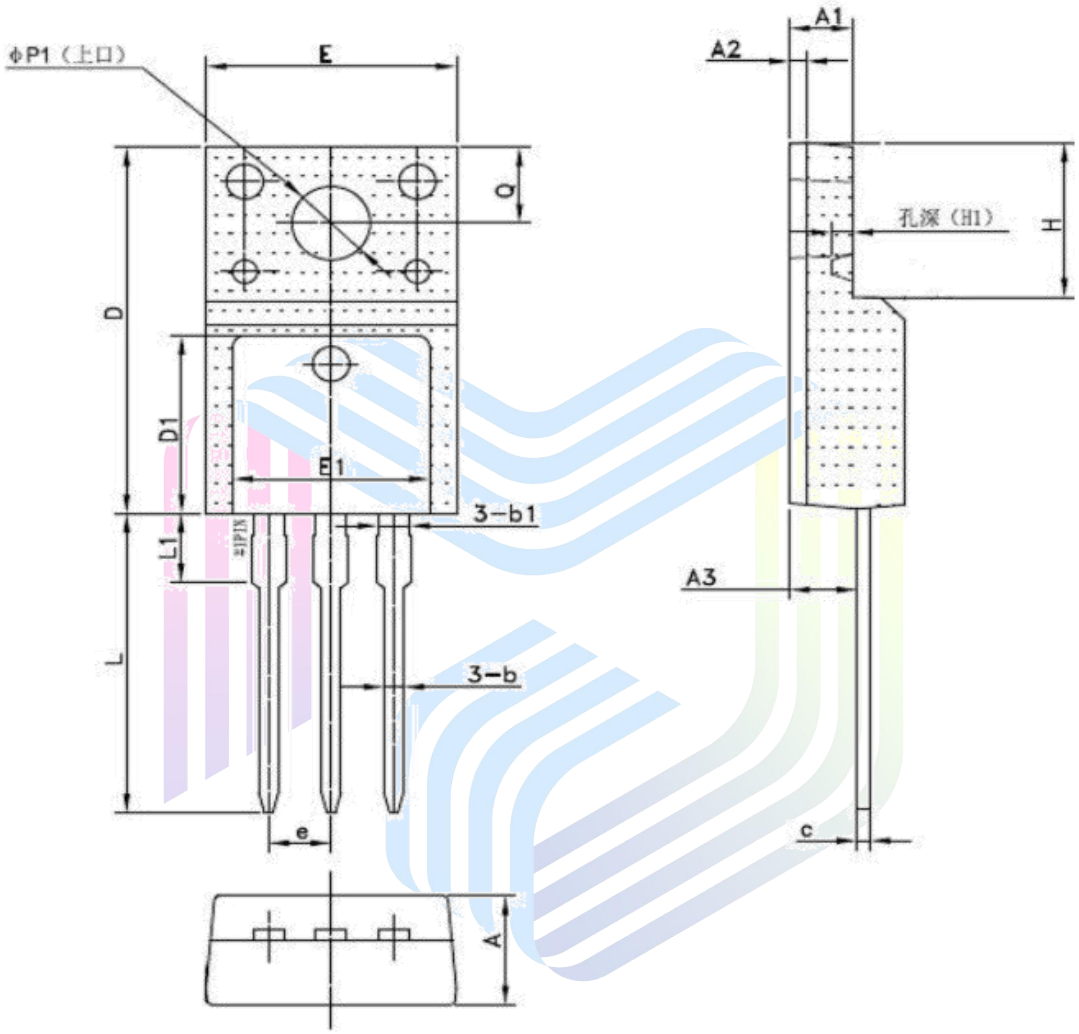
TO-252 Package Information



Symbol	Dimensions(mm)		
	Min.	Typ.	Max.
A	2.20	2.30	2.40
A1	0	-	0.10
A2	0.90	1.00	1.17
b	0.70	0.76	0.90
b1	0.77	-	1.10
b2	5.13	5.33	5.46
c	0.45	-	0.60
D	5.95	6.10	6.25
D1	-	5.30	-
E	6.45	6.60	6.75
E1	-	4.80	-
e	2.286(BSC)		
H	9.70	10.10	10.40
L	1.25	1.50	1.75
L1	-	2.90	-
L2	-	0.51	-
L3	0.90	-	1.25
L4	-	0.80	-
L5	-	1.00	-
L6	-	1.80	-
θ	0°	-	8°

Mechanical Dimensions:

TO-220F Package Information



Symbol	Dimensions(mm)		
	Min.	Typ.	Max.
A	4.30	4.70	4.90
A1	2.34	2.54	2.90
A2	-	0.70	-
A3	2.56	2.76	2.96
b	0.55	-	0.95
b1	-	1.28	-
c	0.42	0.50	0.70
D	14.70	-	16.07
D1	-	7.70	-
E	9.96	10.16	10.36
E1	-	8.00	-
e	2.54(BSC)		
H	-	6.70	-
(H1)	-	(0.81)	-
L	12.48	12.98	13.50
L1	-	2.93	-
ΦP1	-	3.18	-
Q	2.90	3.30	3.50

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