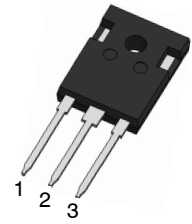


# LN139N65NP

## 650V N-Channel Super Junction MOSFET

### 1. FEATURES

- Super high dense cell design for extremely low RDS(on).
- High power and current handing capability.
- We declare that the material of product compliance with RoHS requirements and Halogen Free.



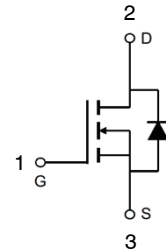
TO-247

### 2. APPLICATIONS

- UPS
- Power Tools

### 3. DEVICE MARKING AND RESISTOR VALUES

Device	Marking	Shipping
LN139N65NP	139N65NP	1500/Tube



### 4. MAXIMUM RATINGS

Parameter		Symbol	Limits	Unit
Drain-to-Source Voltage		VDS	650	V
Gate-to-Source Voltage		VGS	± 30	V
Continuous Drain Current	TC=25°C	ID	26	A
	TC=100°C		16	
Pulsed Drain Current (Note 2)		IDM	56	A
Avalanche Current		IAS	6	A
Avalanche Energy(L=0.1mH)		EAS	1.8	mJ
Power Dissipation	TC=25°C	PD	250	W
	TC=100°C		100	
Operating Junction and Storage Temperature Range		Tj/Tstg	-55~+150	°C

### 5. THERMAL CHARACTERISTICS

Parameter	Symbol	Max	Unit
Junction-to-Ambient	RθJA	40	°C/W
Junction-to-Case(Note 1)	RθJC	0.5	

Note:1.Single unit test, no heat dissipation device installed.

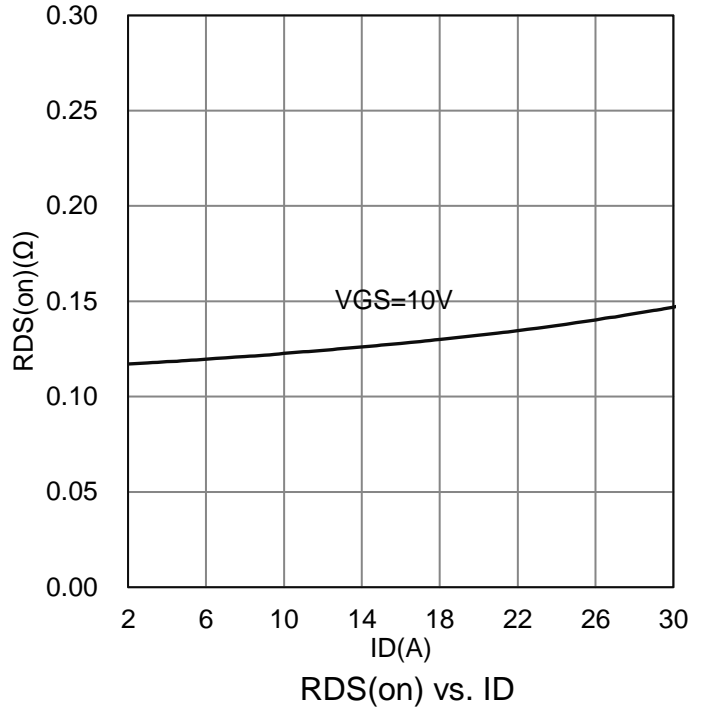
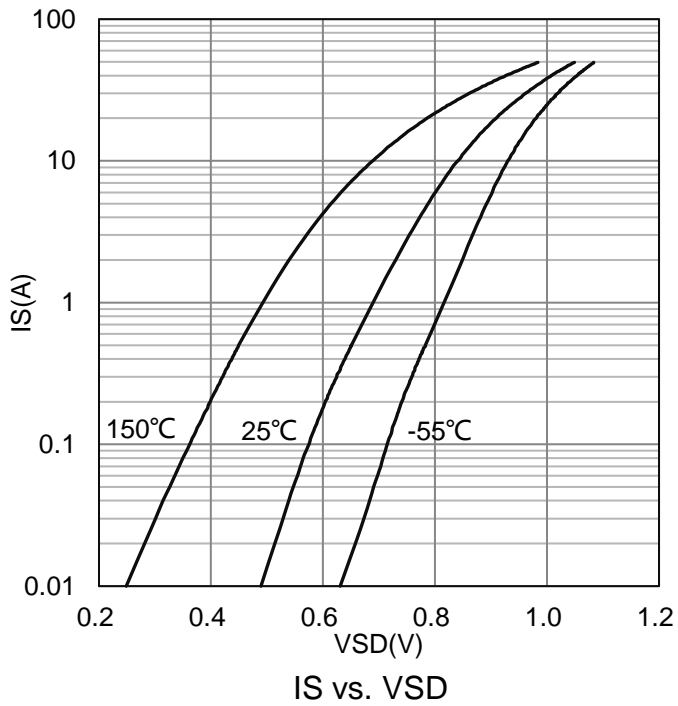
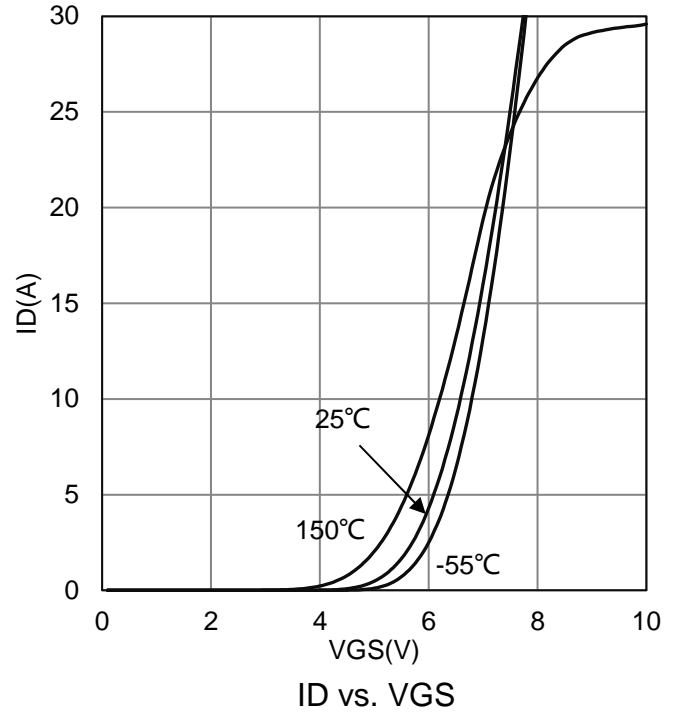
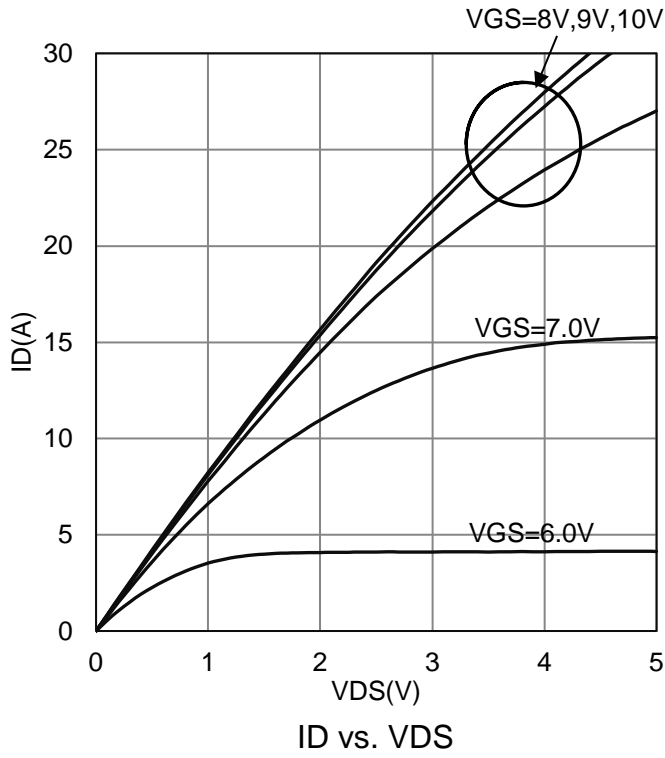
2.Pulse width limited by maximum junction temperature.

**6. ELECTRICAL CHARACTERISTICS (Ta= 25°C)**

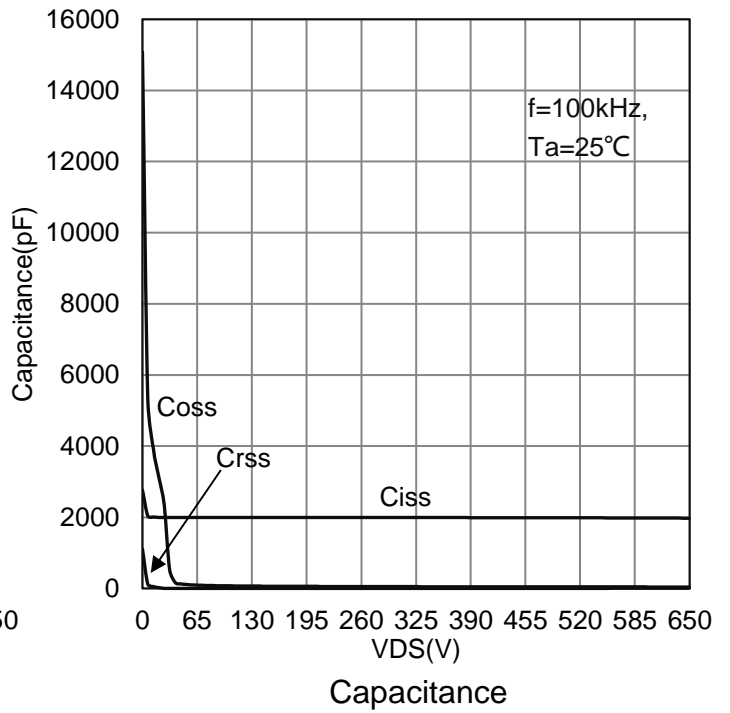
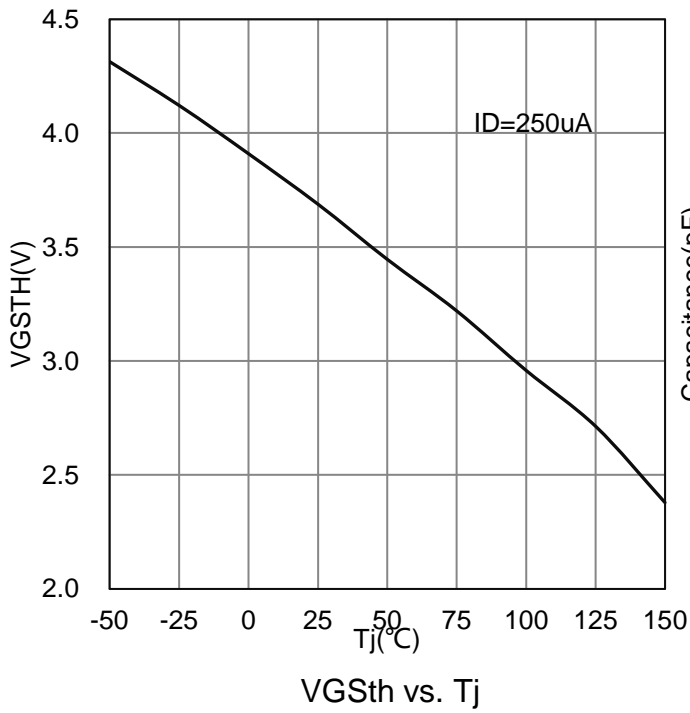
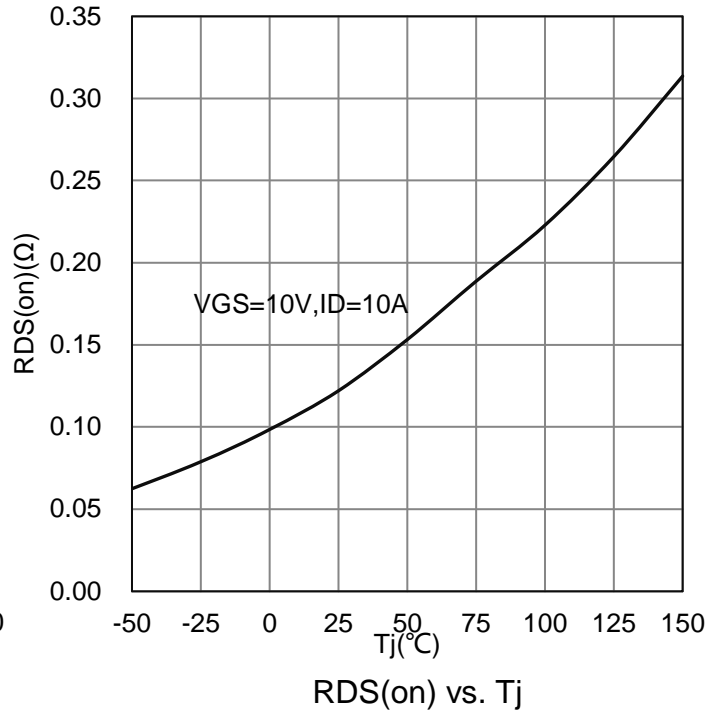
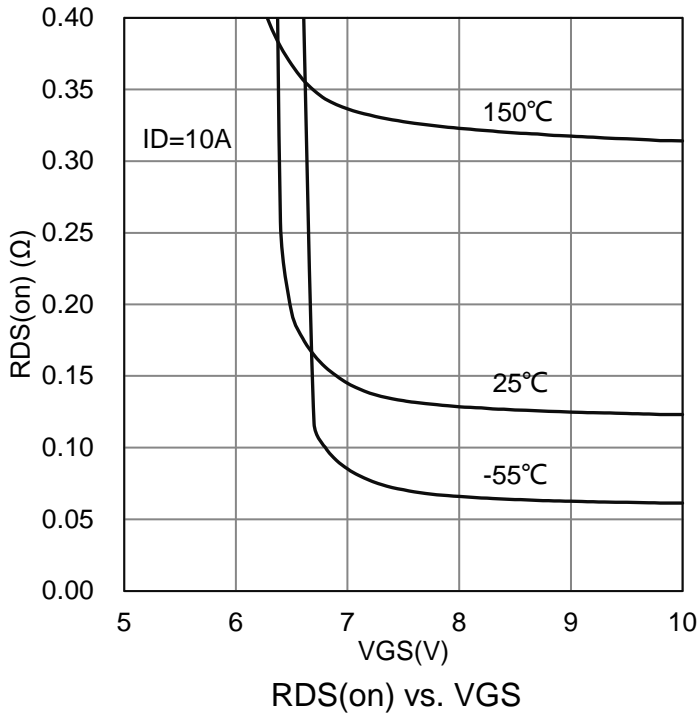
Characteristic	Symbol	Min.	Typ.	Max.	Unit	
<b>Static</b>						
Drain–Source Breakdown Voltage (VGS = 0 V, ID = 250 μA)	VBRDSS	650	-	-	V	
Gate Threshold Voltage (VDS = VGS, ID = 250 uA)	VGS(th)	2.5	3.5	4.5	V	
Gate-Body leakage current (VDS = 0 V, VGS = ±20 V)	IGSS	-	-	±100	nA	
Zero Gate Voltage Drain Current (VDS = 650 V, VGS = 0 V)	IDSS	-	-	3	uA	
Drain-to-Source On-Resistance (Note 3) (VGS = 10 V, ID = 14 A)	RDS(ON)	-	120	139	mΩ	
Diode Forward Voltage (IS = 14 A, VGS = 0 V)	VSD	-	-	1.5	V	
<b>Dynamic</b>						
Total Gate Charge	(VDS = 520 V, VGS = 10 V, ID = 14 A)	Qg	-	40.5	-	nC
Gate to Source Charge		Qgs	-	13.5	-	
Gate to Drain Charge		Qgd	-	17.5	-	
Turn-on Delay Time	(VDD = 520 V, ID = 14 A, RGEN = 6 Ω, VGS = 10 V)	td(on)	-	40	-	nS
Rise Time		tr	-	33	-	
Turn-Off Delay Time		td(off)	-	65	-	
Fall Time		tf	-	19	-	
Input Capacitance	(VDS = 150 V, VGS = 0 V, f = 100kHz)	Ciss	-	2004	-	pF
Output Capacitance		Coss	-	75	-	
Reverse Transfer Capacitance		Crss	-	0.6	-	
Gate-Resistance (VDS = 0 V, VGS = 0 V, f = 1.0MHz)	Rg	-	20	-	Ω	

3. Pulse test: PW ≤ 300μs duty cycle ≤ 2%.

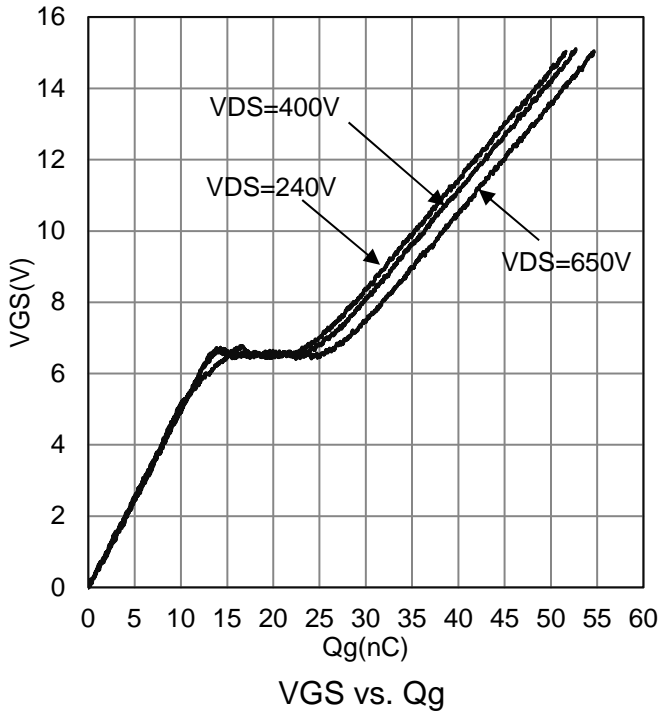
### 7. ELECTRICAL CHARACTERISTICS CURVES



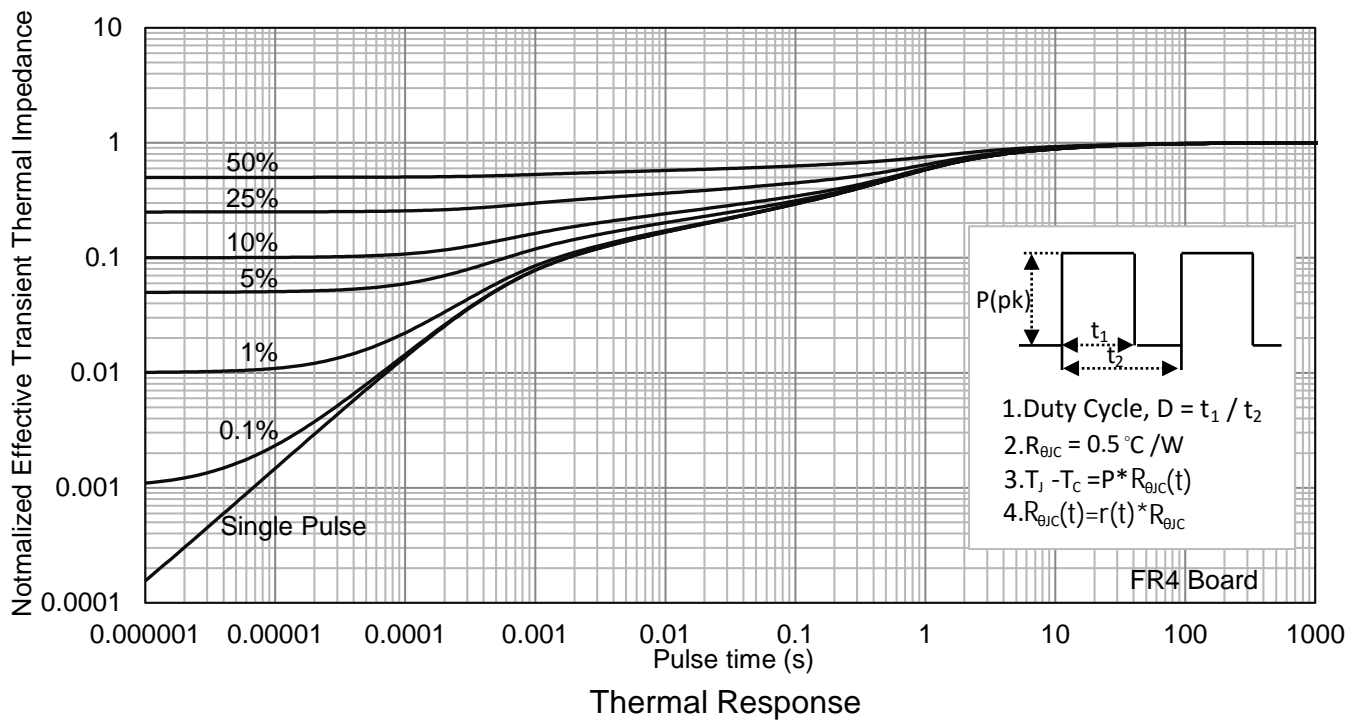
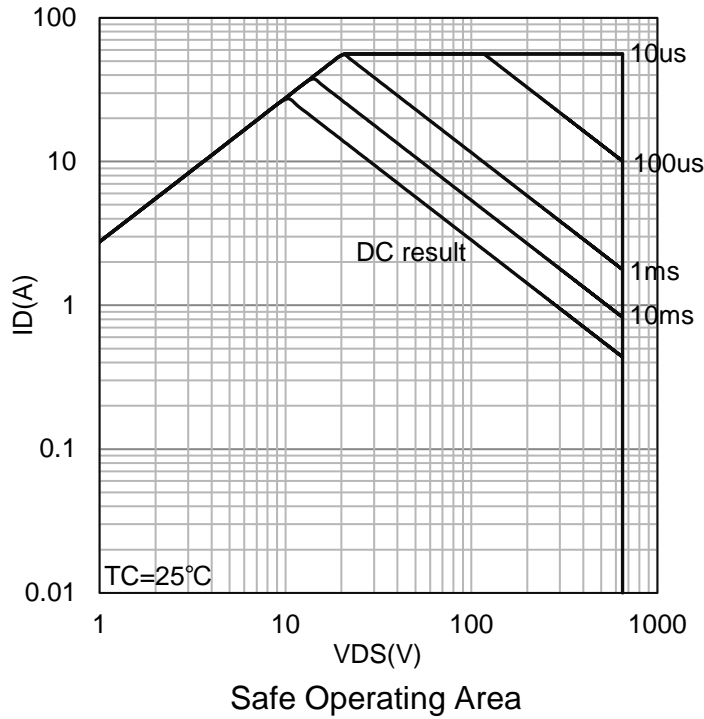
**7. ELECTRICAL CHARACTERISTICS CURVES(Con.)**



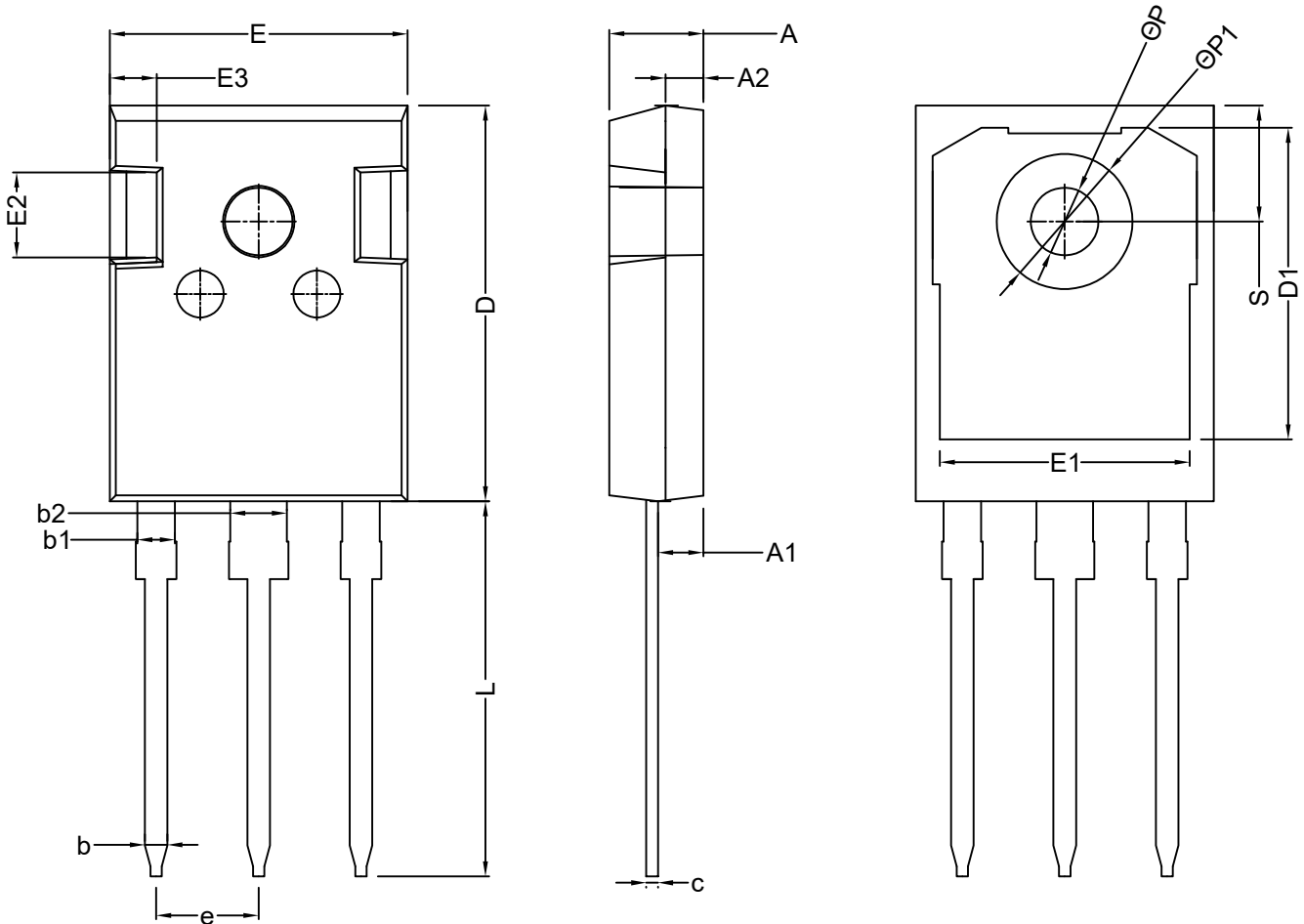
### 7. ELECTRICAL CHARACTERISTICS CURVES(Con.)



**7. ELECTRICAL CHARACTERISTICS CURVES(Con.)**



### 8.OUTLINE AND DIMENSIONS



SYMBOL	mm		
	Min	Nom	Max
A	4.80	5.00	5.20
A1	2.21	2.41	2.61
A2	1.85	2.00	2.15
b	1.10	1.20	1.35
b1	1.90	2.00	2.20
b2	2.90	3.00	3.20
c	0.50	0.62	0.76
D	20.70	21.00	21.30
D1	16.25	16.55	16.95
E	15.50	15.80	16.10
E1	12.94	13.26	13.56
E2	4.30	4.50	4.70
E3	2.30	2.50	2.70
e		5.44BSC	
L	19.60	19.90	20.20
ØP	3.40	3.60	3.80
ØP1	6.90	7.20	7.50
S		6.15BSC	

## **DISCLAIMER**

- Curve guarantee in the specification. The curve of test items with electric parameter is used as quality guarantee. The curve of test items without electric parameter is used as reference only.
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