

Features

- Much lower On-resistance RDS(ON)
- LowCrss
- Fast switching
- Improved dv/dt capability
- Electrostatic Discharge (ESD)

Applications

- LED/LCD/PDP TV and monitor Lighting
- Solar/Renewable/UPS-Micro Inverter System
- Charger
- Power Supply

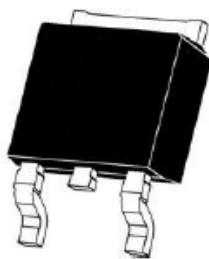


Product Summary

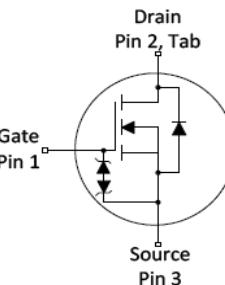
VDS	650	V
RDS(on),Typ.@VGS=10V	341	mΩ
ID	11	A

100% UIS TESTED!

100% ΔVds TESTED!



TO-252



Schematic Diagram

Absolute Maximum Ratings

T_C = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V _{DSS}	Drain-Source Voltage	650	V
I _D	Drain Current - Continuous (T _C = 25°C)	11	A
	- Continuous (T _C = 100°C)	7.9	A
I _{DM}	Drain Current - Pulsed (Note 1)	44	A
V _{GSS}	Gate-Source Voltage	±30	V
E _{AS}	Single Pulsed Avalanche Energy	300	mJ
P _D	Power Dissipation (T _C = 25°C)	83	W
R _{θJC}	Thermal Resistance, Junction to Case	1.50	W/°C
T _J , T _{TSG}	Operating and Storage Temperature Range	-55 to +150	°C
T _L	Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	300	°C

* Drain current limited by maximum junction temperature.

650V N-Channel Super-Junction MOSFET

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
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Off Characteristics

BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _D = 250 uA	650	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 650 V, V _{GS} = 0 V	--	--	1	uA
		V _{DS} = 520V, T _C = 125°C	--	--	10	uA
I _{GSSF}	Gate-Body Leakage Current, Forward	V _{GS} = 30V, V _{DS} = 0 V	--	--	1	uA
I _{GSFR}	Gate-Body Leakage Current, Reverse	V _{GS} = -30 V, V _{DS} = 0 V	--	--	-1	uA

On Characteristics

V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250 uA	2.0	3.0	4.0	V
R _{D(on)}	Static Drain-Source On-Resistance	V _{GS} = 10 V, I _D = 3.4A	--	341	360	mΩ

Dynamic Characteristics

C _{iss}	Input Capacitance	V _{DS} = 25 V, V _{GS} = 0 V, f = 1.0 MHz	--	780	-	pF
C _{oss}	Output Capacitance		--	597	-	pF
C _{rss}	Reverse Transfer Capacitance		--	17.4	-	pF

Switching Characteristics

t _{d(on)}	Turn-On Delay Time	V _{GS} = 10 V, V _{DS} =400 V, R _G = 25Ω ,I _D =4A	--	16	--	ns
t _r	Turn-On Rise Time		--	35	--	ns
t _{d(off)}	Turn-Off Delay Time		--	75	--	ns
t _f	Turn-Off Fall Time		--	38	--	ns
Q _g	Total Gate Charge	V _{DS} = 400 V, I _D = 4A, V _{GS} = 10V	--	18.9	--	nC
Q _{gs}	Gate-Source Charge		--	2.54	--	nC
Q _{gd}	Gate-Drain Charge		--	6.09	--	nC

Drain-Source Diode Characteristics and Maximum Ratings

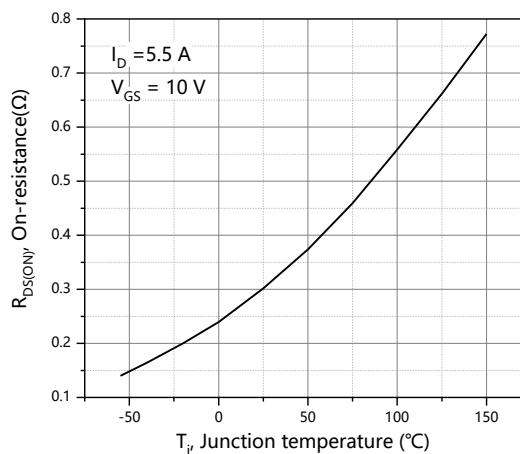
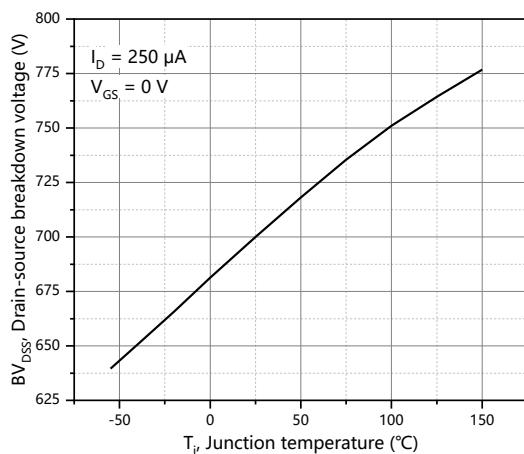
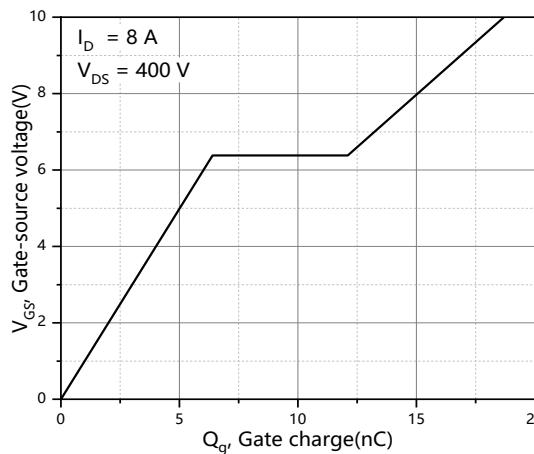
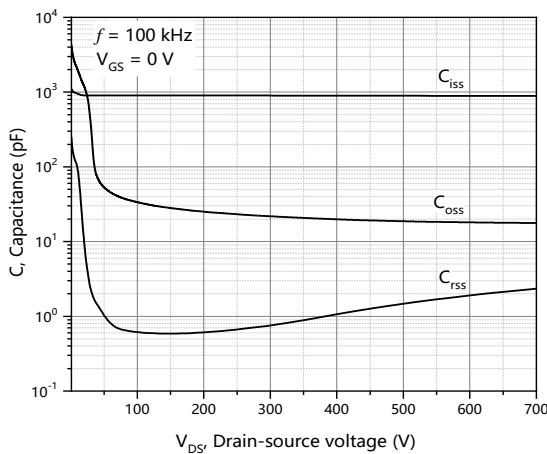
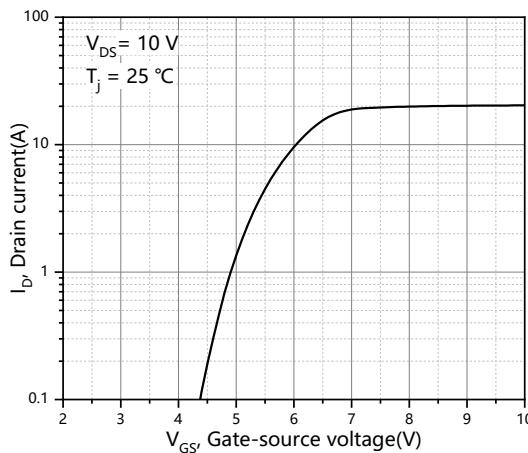
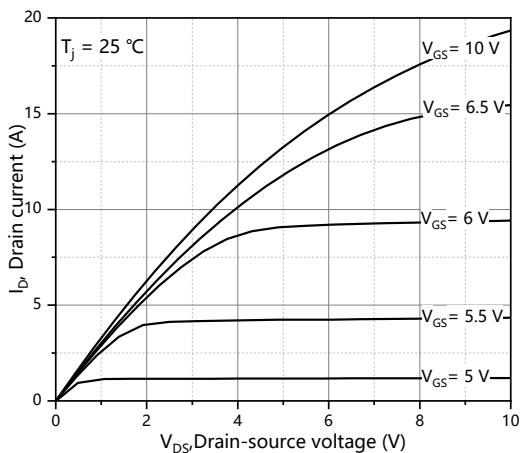
I _S	Maximum Continuous Drain-Source Diode Forward Current	--	--	11	A
I _{SM}	Maximum Pulsed Drain-Source Diode Forward Current	--	--	44	A
V _{SD}	Drain to Source Diode Forward Voltage, V _{GS} = 0V, I _{SD} = 3A, T _J = 25°C	0.32	0.8	1.2	V
t _{rr}	Body Diode Reverse Recovery Time, I _F = 3.4A, dI/dt=100A/μs	--	208	--	nS
Q _{rr}	Body Diode Reverse Recovery Charge, I _F = 3.4A, dI/dt=100A/μs	--	1.7	--	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: T_J = 25°C, V_{DD} = 50V, V_G = 10V, R_G = 25Ω, L = 0.5mH,
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 0.5%

650V N-Channel Super-Junction MOSFET

Electrical Characteristics Diagrams



650V N-Channel Super-Junction MOSFET

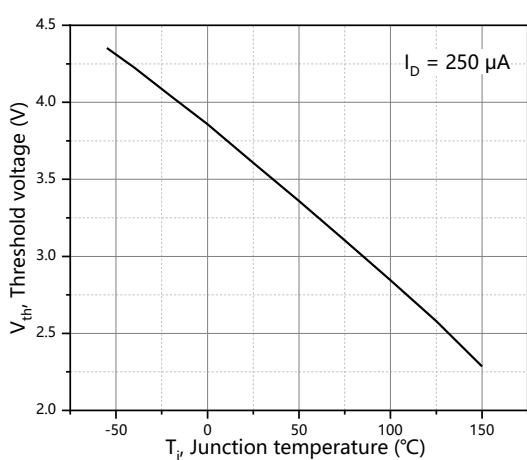


Figure 7. Threshold voltage

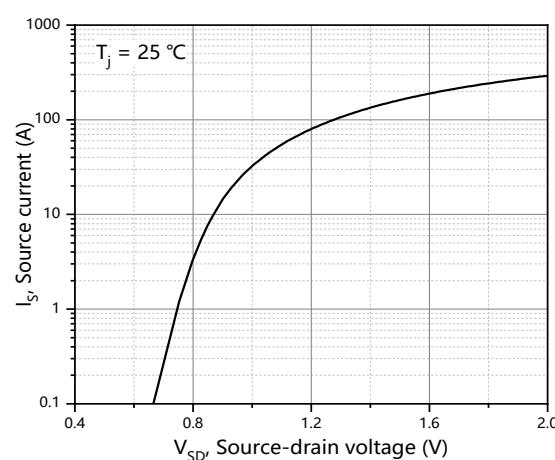


Figure 8. Forward characteristic of body diode

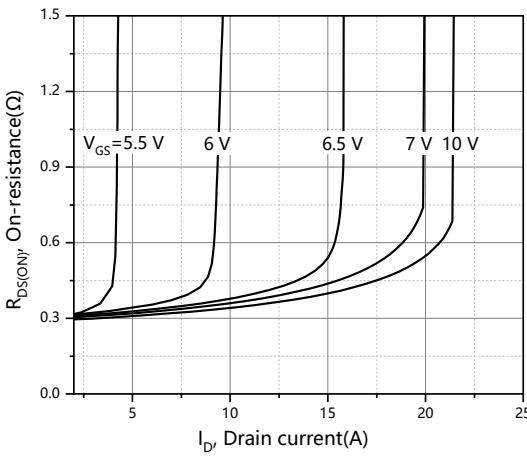


Figure 9. Drain-source on-state resistance

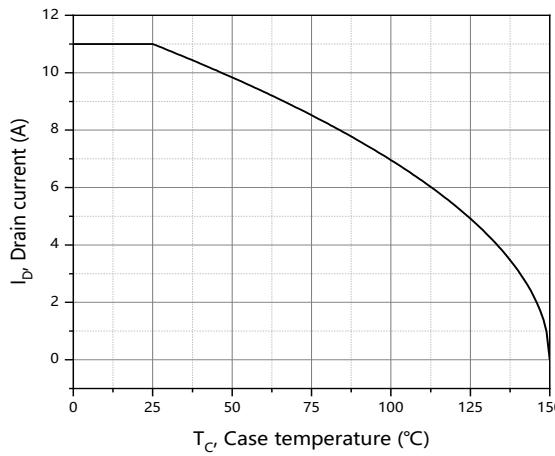


Figure 10. Drain current

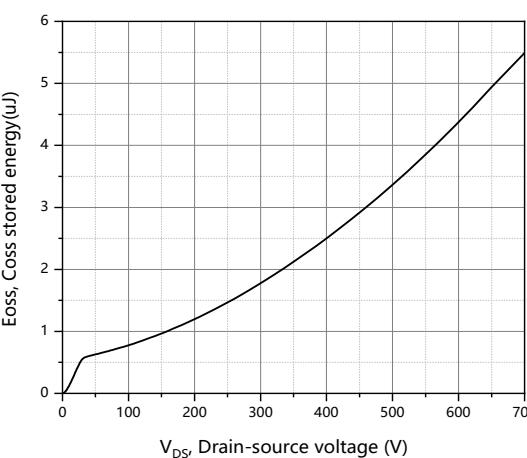


Figure 11. Typ. Coss stored energy

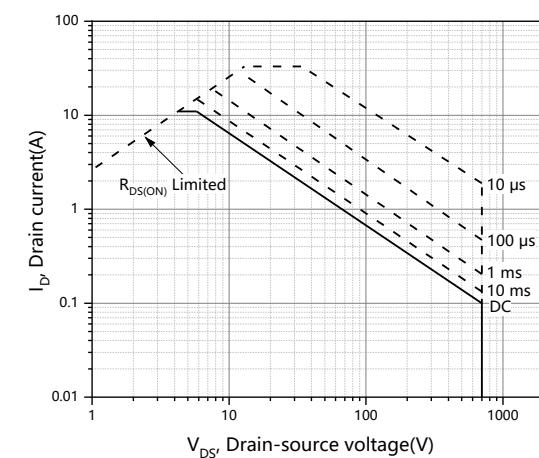


Figure 12. Safe operation area $T_c=25\text{ }^{\circ}\text{C}$

650V N-Channel Super-Junction MOSFET

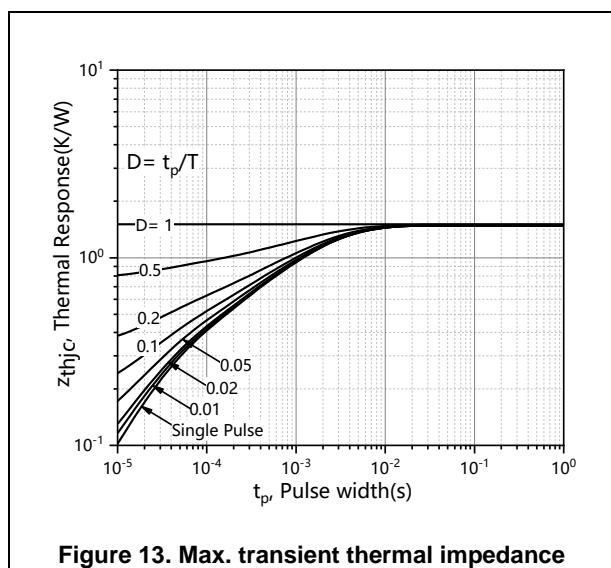


Figure 13. Max. transient thermal impedance

650V N-Channel Super-Junction MOSFET

Test circuits and waveforms

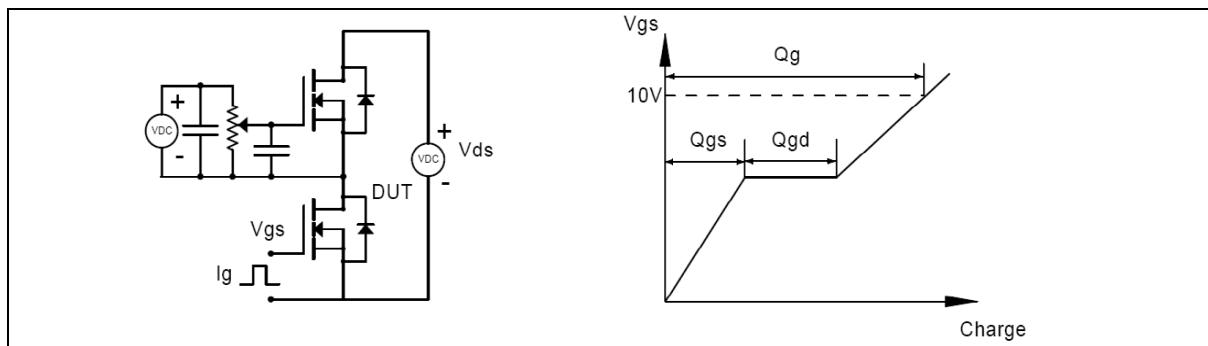


Figure 1. Gate charge test circuit & waveform

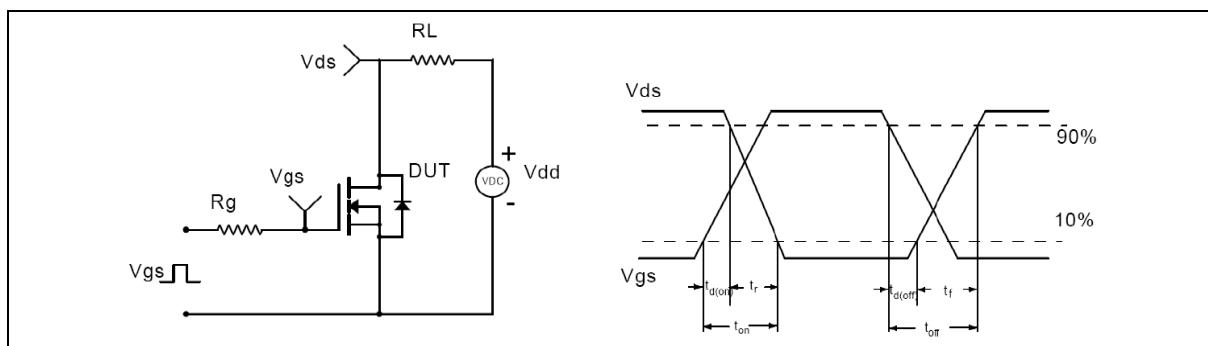


Figure 2. Switching time test circuit & waveforms

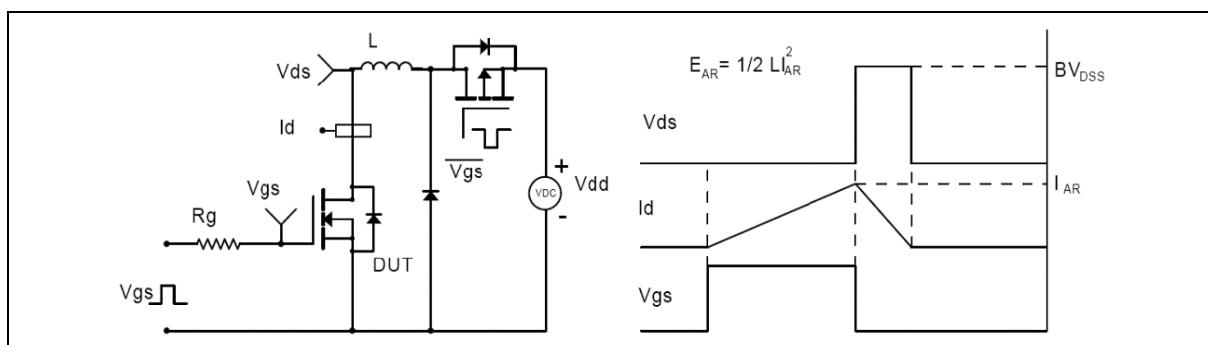


Figure 3. Unclamped inductive switching (UIS) test circuit & waveforms

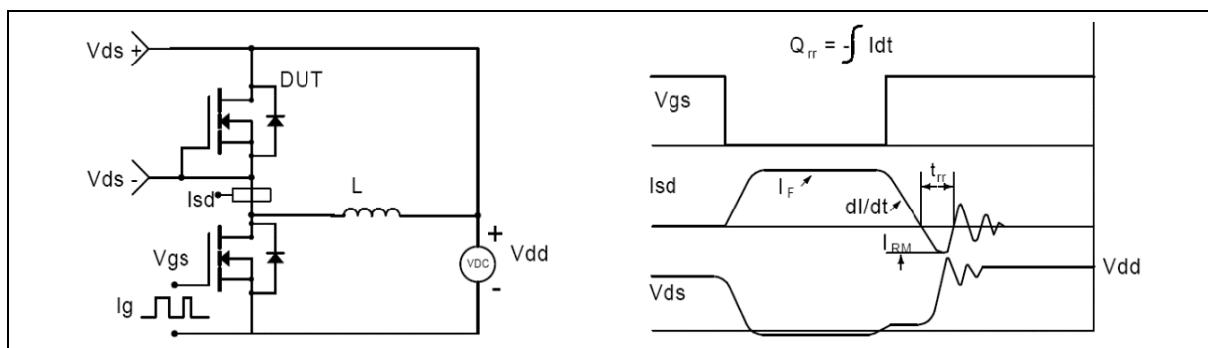


Figure 4. Diode reverse recovery test circuit & waveforms

Ordering and Marking Information

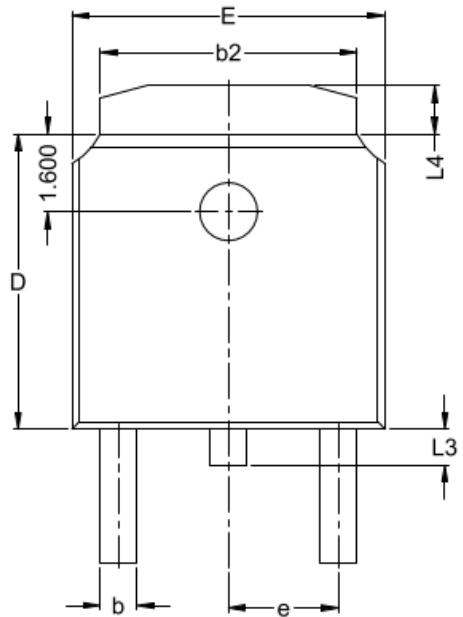
Ordering Device No.	Marking	Package	Packing	Quantity
ASJ360N65K1HE-R	J360N65	TO-252	Tape&Reel	2500/Reel

PACKAGE	MARKING
TO-252	 AS □□□ → Lot Number J360N65 □□□□ → Date Code

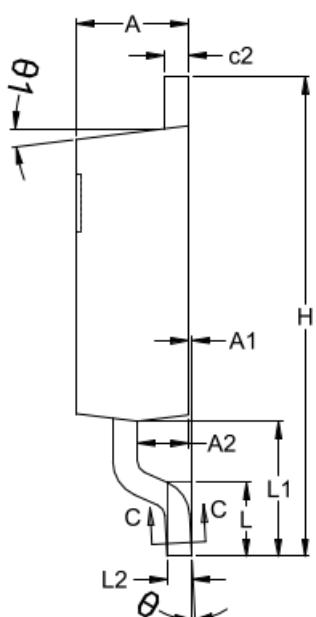
Package Description

650V N-Channel Super-Junction MOSFET

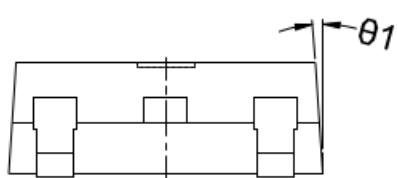
TO-252



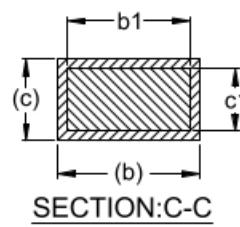
TOP VIEW



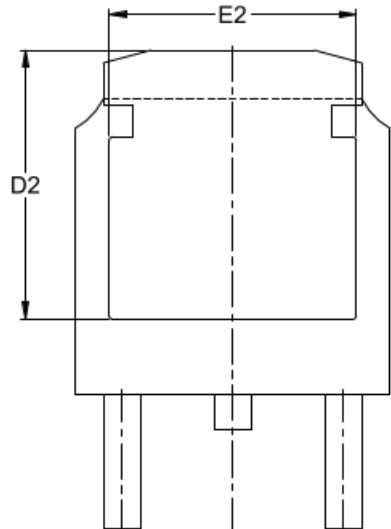
SIDE VIEW(Right)



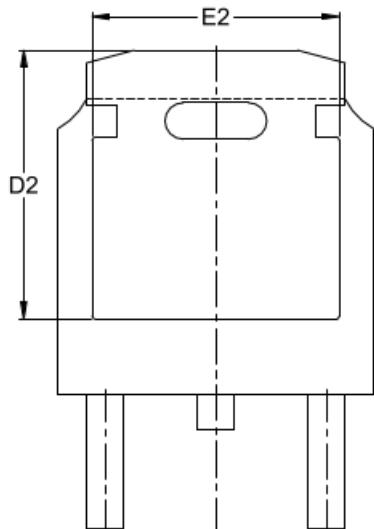
SIDE VIEW(Front)



SECTION:C-C



OPTION 1
BOTTOM VIEW



OPTION 2
BOTTOM VIEW

DIM SYMBOL	MIN.	NOM.	MAX.
A	2.200	2.300	2.400
A1	0.000	0.070	0.130
A2	0.950	1.050	1.150
b	0.700	0.800	0.900
b1	0.660	0.760	0.860
b2	5.134	5.334	5.534
c	0.448	0.548	0.648
c1	0.458	0.508	0.558
c2	0.448	0.548	0.648
D	6.000	6.100	6.200
D2	5.372	5.572	5.772
E	6.400	6.500	6.600
E2	4.900	5.100	5.300
e	2.286 BSC.		
H	9.700	9.900	10.100
L	1.380	1.525	1.725
L1	2.588	2.788	2.988
L2	0.508 BSC.		
L3	0.600	0.750	0.950
L4	0.812	1.012	1.212
θ	1°	3°	5°
θ1	6°	7°	8°

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