

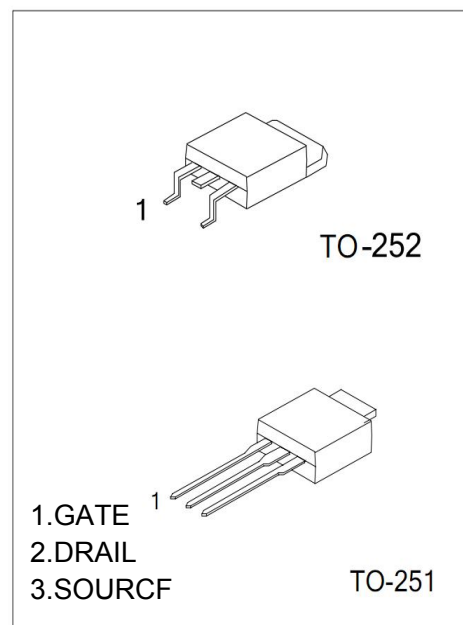
TO-252/251 Plastic-Encapsulate MOSFETS

BYD4N65 / BYU4N65

N-Channel 650-V(D-S) Power MOSFET

V(BR)DSS	RDS(on)MAX	ID
650 V	3.5Ω@ 10 V	4A

Equivalent Circuit:



General Description:

The high voltage MOSFET uses an advanced termination scheme to provide enhanced voltage-blocking capability without degrading performance over time. In addition, this advanced MOSFET is designed to withstand high energy in avalanche and commutation modes. The new energy efficient design also offers a drain-to-source diode with a fast recovery time. Designed for high voltage, high speed switching applications in power suppliers, converters and PWM motor controls, these devices are particularly well suited for bridge circuits where diode speed and commutating safe operating areas are critical and offer additional and safety margin against unexpected voltage transients.

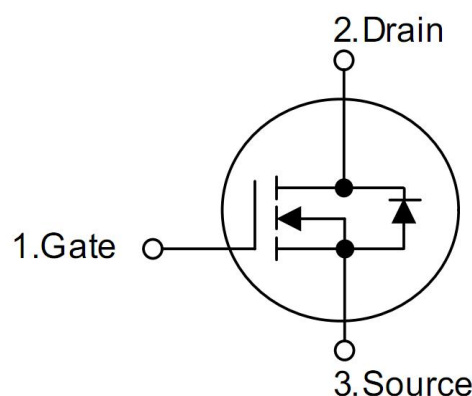
MARKING:

4N65 **D / U** ****
 (D-252) / (U-251)

FEATURE:

- ※ High Current Rating
- ※ Lower Rds(on)
- ※ Lower Capacitance
- ※ Improved dv/dt capability
- ※ Fast switching
- ※ Lower total gate charge (typical 5.0 nC)
- ※ TrenchFET Power MOSFET

SYMBOL:



Maximum ratings (Ta=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	VDS	650	V
Gate-Source Voltage	VGS	±30	
Continuous Drain Current	ID	4	A
Pulsed Diode Current	IDM	8	
Power Dissipation	PD	50	W
Thermal Resistance from Junction to Ambient (t≤10s)	RθJA	100	℃/W
Operating Junction	TJ	150	℃
Storage Temperature	TSTG	-55~+150	

MOSFET ELECTRICAL CHARACTERISTICS

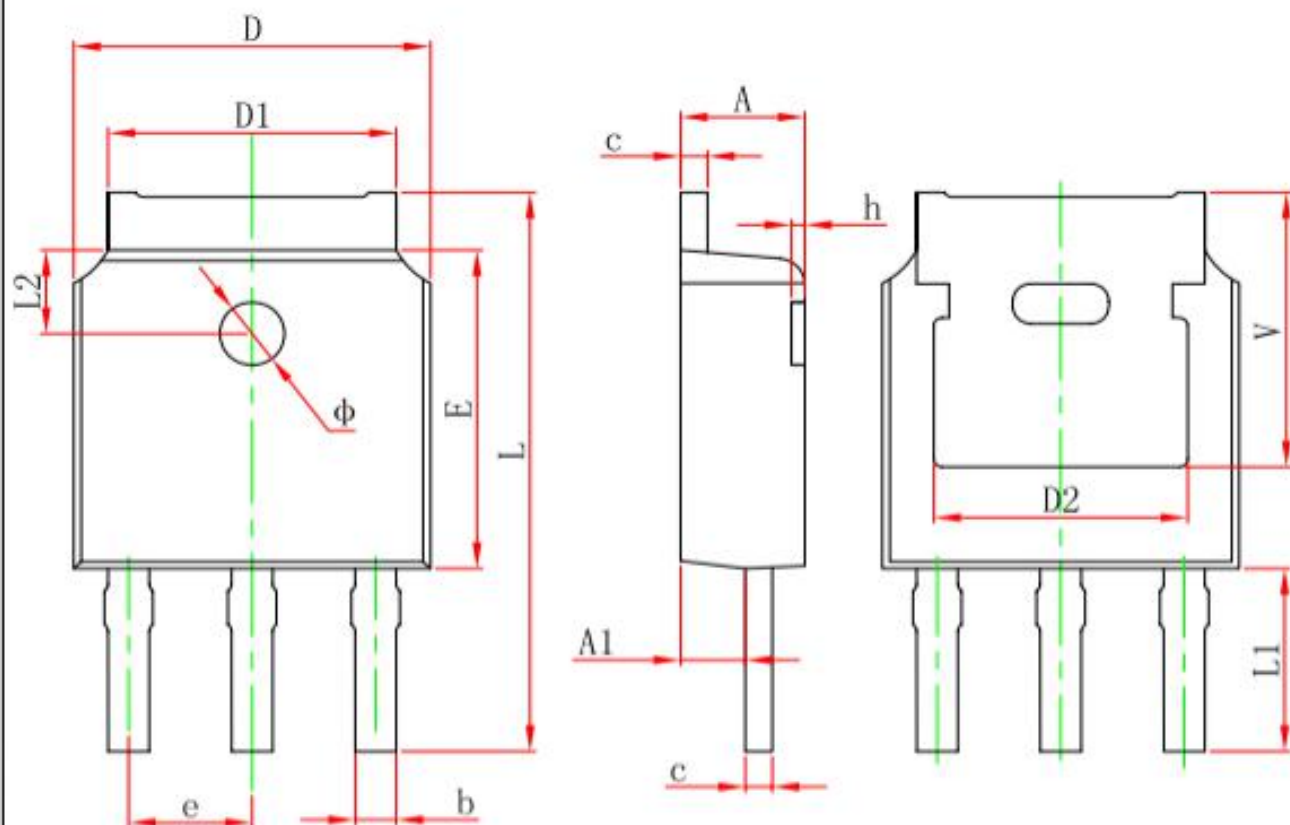
Static Electrical Characteristics (Ta = 25 °C Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-source breakdown voltage	V(BR)DSS	VGS = 0V, ID = 250μA	650			V
Gate-source threshold voltage	VGS(th)	VDS =VGS, ID = 250μA	2		4	V
Gate-source leakage	IGSS	VDS =0V, VGS = ±30V			±100	nA
Zero gate voltage drain current	IDSS	VDS = 650V, VGS =0V			10	μA
Drain-source on-state resistancea	RDS(on)	VGS = 10V, ID = 2A		1.9	3.5	Ω
Forward transconductancea	gfs	VDS = 520V, ID = 4A	3			S
Diode forward voltage	VSD	IS= 2A, VGS=0V		0.8	1.5	V
Dynamic						
Input capacitance	Ciss	VDS = 25V,VGS =0V, f=1MHz		532		pF
Output capacitance	Coss			57		pF
Reverse transfer capacitanceb	Crss			3.5		pF
Total gate charge	Qg	VDS = 25V,VGS = 10V, ID = 4A		15		nC
Gate-source charge	Qgs			4.9		nC
Gate-drain charge	Qgd			3		nC
Switchingb						
Turn-on delay time	td(on)	VDS= 300V RL= 18Ω, ID = 4A, VGEN= 10V,Rg= 18Ω		5.6		ns
Rise time	tr			16.5		ns
Turn-off delay time	td(off)			37		ns
Fall time	tf			26.5		ns
Drain-Source Diode Characteristics						
Continuous Source-Drain Diode Current	IS				4	A
Pulsed Diode forward Curren	ISM				8	A
Body Diode Reverse Recovery Time	trr	If=4A, dI/dt=100A/us		332		ns
Body Diode Reverse Recovery Charge	grr	If=4A, dI/dt=100A/us		1.7		UC

Note :

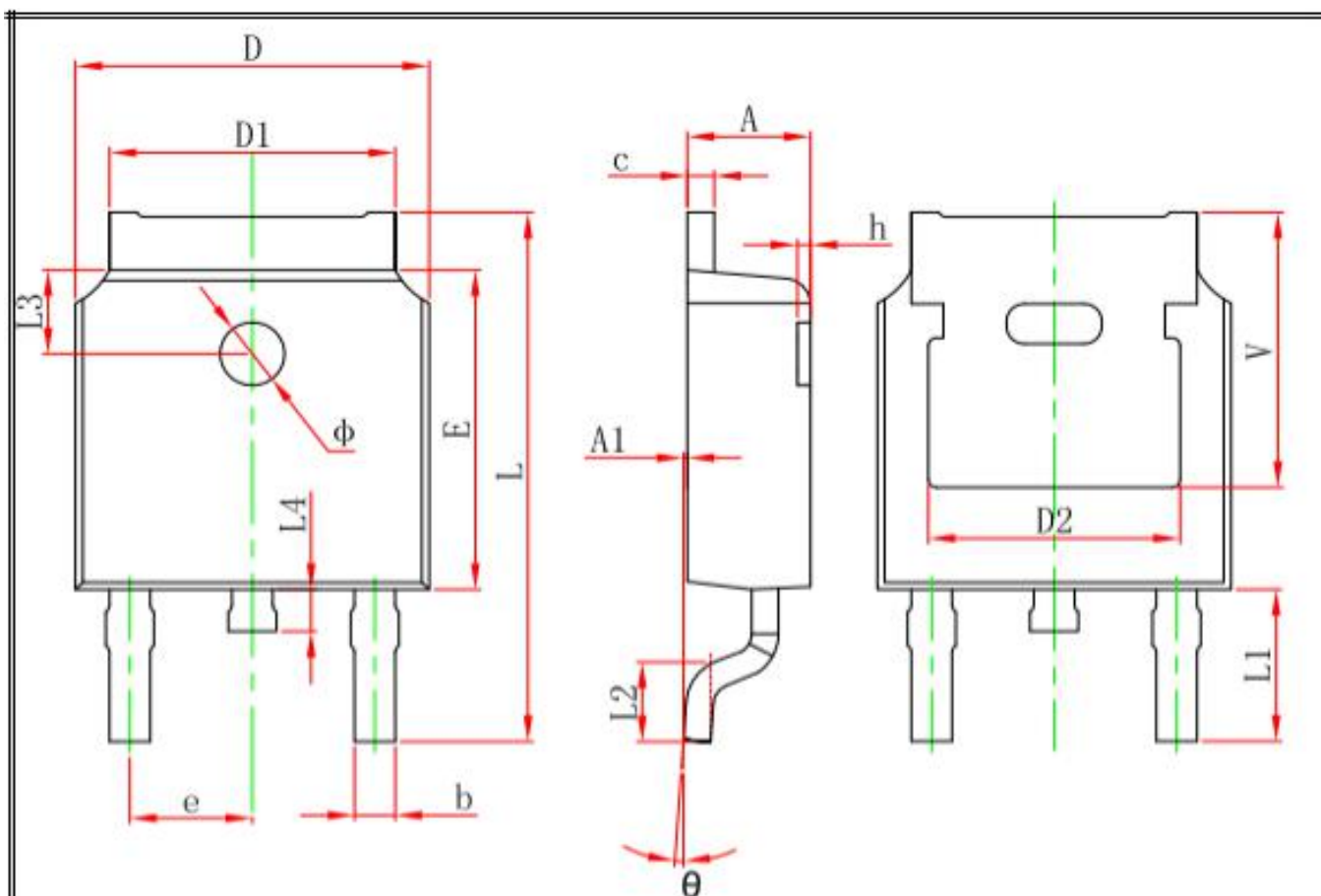
1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t < 5 sec.
3. Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.

PACKAGE OUTLINE DIMENSIONS :



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.860	1.160	0.034	0.046
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	10.400	11.000	0.409	0.433
L1	3.300	3.700	0.130	0.146
L2	1.600 REF.		0.063 REF.	
Φ	1.100	1.300	0.043	0.051
h	0.000	0.300	0.000	0.012
V	5.350 REF.		0.211 REF.	

PACKAGE OUTLINE DIMENSIONS :



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 REF.		0.211 REF.	