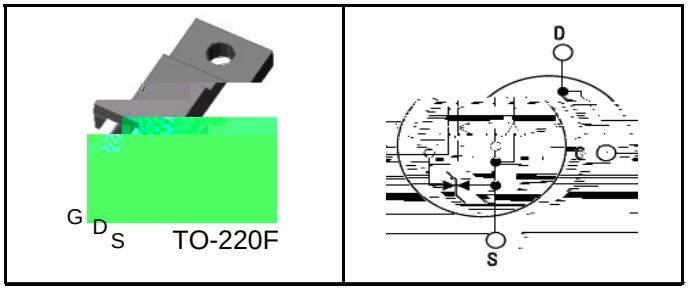
650V N Channel Super Junction MOSFET



Application

- Switch Mode Power Supply (SMPS)
- Uninterruptible Power Supply (UPS)
- Power Factor Correction (PFC)
- TV power & LED Lighting Power



Absolute Maximum Ratings

T_C=25 unless otherwise specified

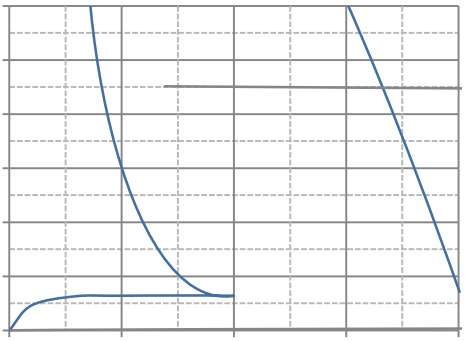
Symbol	Parameter	Value	Unit
V_{DSS}	Drain-Source Voltage	650	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current - Continuous (T_C = 25)	10.4 *	A
	Drain Current - Continuous (T_C = 100)	6.6 *	A
I_{DM}[1)]	Drain Current - Pulsed	29.0 *	A
E_{AS}[2)]	Single Pulsed Avalanche Energy	140	mJ
I_{AR}	Avalanche Current	1.8	A
dv/dt	MOSFET dv/dt ruggedness, VDS=0…520V	50	V/ns
dv/dt	Reverse diode dv/dt, V_{DS}=0…520V, I_{DS}≤I_D	15	V/ns
P_D	Power Dissipation (T_C = 25)	30	W
$V_{ESD(G-S)}$	Gate source ESD(HBM-C=100pF, R=1.5KΩ)	2500	V
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	

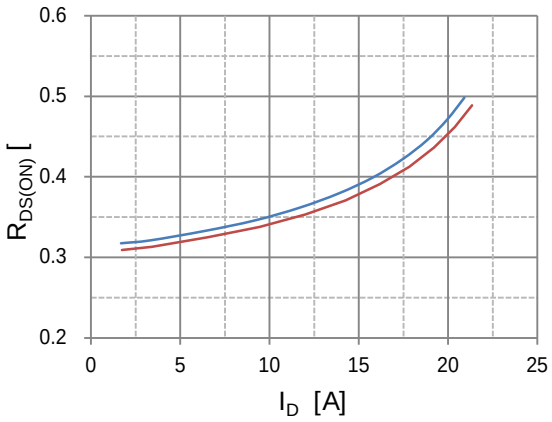
* Drain current limited by maximum junction temperature

Thermal Resistance Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case, Max.	4.1	/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient , Max.	62.5	/W

Electrical Characteristics T_J=25 °C




0.6
0.5
0.4
0.3
0.2
$R_{DS(ON)}$ [
0
5
10
15
20
25
I_D [A]

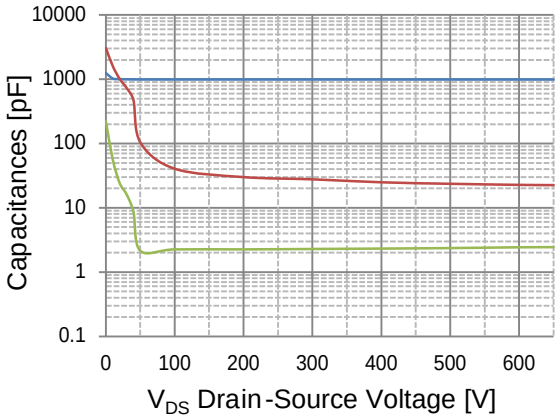

10000
1000
100
10
1
0.1
Capacitances [pF]
0
100
200
300
400
500
600
V_{DS} Drain-Source Voltage [V]

Fig 12. Gate Charge Test Circuit & Waveform

Fig 13. Resistive Switching Test Circuit & Waveforms

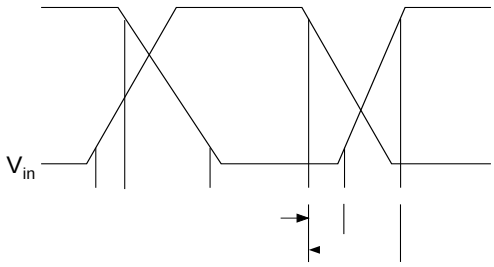
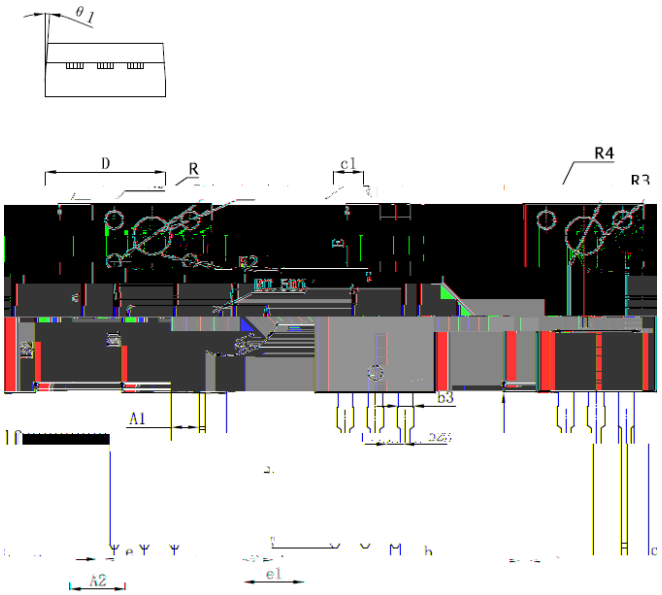


Fig 14. Unclamped Inductive Switching Test Circuit & Waveforms

$$E_{AS} = \frac{1}{2} L_L I_{AS}^2 \frac{BV_{DSS}}{BV_{DSS} - V_{DD}}$$

Fi

Package Dimension



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	15.670	15.870	16.070
A1	2.150	2.350	2.550
A2	4.500	4.700	4.900
b	0.770	0.800	0.830
b2	1.200	1.300	1.400
b3	1.200BSC		
c	0.490	0.500	0.520
c1	2.340	2.540	2.740
D	9.960	10.160	10.360
E	6.480	6.680	6.880
E1	8.990	9.190	9.390
E2	7.100	7.300	7.500
e	2.540BSC		
e1		5.080	

