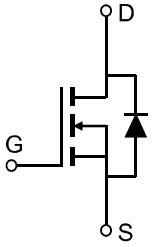
Description

Features

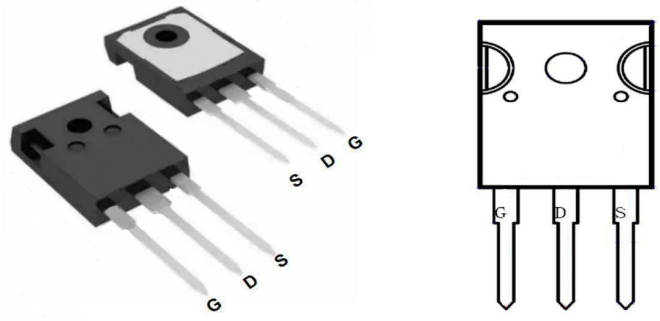
- 650V, 24A
  $R_{DS(ON)}$ Typ = 130mΩ@ V_{GS} = 10V
- It has been designed to low on-state resistance and high frequency
- Fast reverse recovery body diode
- Low $R_{DS(ON)}$
- Ultra-low on-resistance



Schematic Diagram

Application

- SMPS
- Adapter
- LED lighting
- TV Power Supply



Marking and Pin Assignment

Package Marking and Ordering Information

Device	Marking	Package	Outline	TUBE (pcs)	InnerBox (pcs)	Per Carton (pcs)
CN33N60M2	CX130RN65H	TO-247-3L	TUBE	30	450	2250

Absolute Maximum Ratings (@ T_J=25°C unless otherwise specifie)

Symbol	Parameter		Value	Units
V_{DS}	Drain-Source Voltage		650	V
I_D	Continuous drain current (Note 1)	T_C = 25 °C T_C = 100°C	24 14.4	A
I_{DM}	Drain Current - Pulsed (Note 2)		96	A
E_{AS}	Single Pulsed Avalanche Energy (Note 3)		361	mJ
V_{GS}	Gate source voltage		±20	V
P_D	Power Dissipation	T_C = 25 °C	241	W
Tj,Tstg	Operating and Storage temperature		-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Value	Units
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient, Steady State	60	°C/W
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case, Steady-State	0.52	°C/W

Electrical Characteristics(T_J=25°C unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
B_{VDSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_D = 250 μA	650	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 650V, V_{GS} = 0V	-	-	1.0	μA
I_{GSS}	Gate-Body Leakage Current	V_{DS} = 0V, V_{GS} = ±30V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250 μA	3	3.5	4	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance	V_{GS} = 10V, I_D = 5A	-	130	156	mΩ
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 50V, F = 1 MHz	-	1354	-	pF
C_{oss}	Output Capacitance		-	107	-	pF
C_{rss}	Reverse Transfer Capacitance		-	9.0	-	pF
Q_g	Total Gate Charge	V_{DD} = 400V,I_D = 15A, V_{GS} = 0 to 10V	-	16	-	nC
Q_{gs}	Gate Source Charge		-	6	-	nC
Q_{gd}	Gate Drain Charge		-	6.9	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{DD} = 400V V_{GS} = 10 V I_D = 15A R_G = 5 Ω	-	51	-	ns
t_r	Turn-On Rise Time		-	19	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	53	-	ns
t_f	Turn-Off Fall Time		-	15.8	-	ns
Diode Recovery Characteristics						
I_S	Continuous Source Current (Body Diode)		-	-	24	A
I_{SM}	Pulsed Source Current (Body Diode)		-	-	72	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0 V, I_S = 15 A	-	0.8	1.2	V
trr	Body Diode Reverse Recovery Time	V_R = 400V,I_F = 15A, di/dt = 100A/us	-	223	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	4.4	-	μC
Irrm	PeaK reverse recovery current		-	27	-	A

Notes:

1.The max drain current rating is junction temperature limited

2. Repetitive Rating: Pulse width limited by maximum junction temperature

3. E_{AS} condition: Starting T_J=25°C, V_{DD}=100V, V_G=10V, R_G=25ohm, L=10mH, I_{AS}=8.5A

Test Circuit

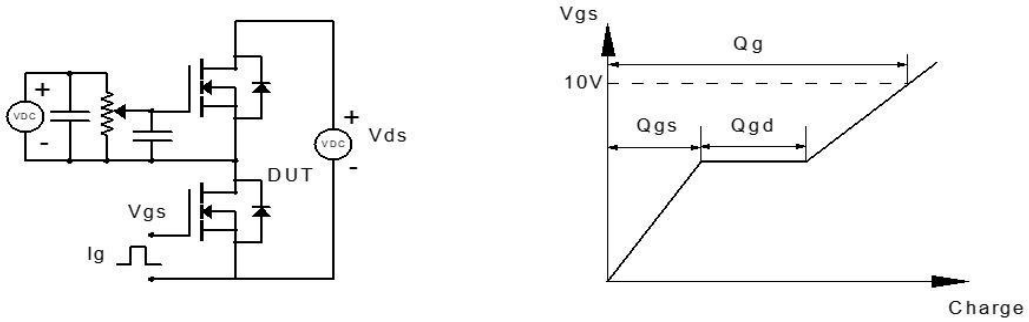


Figure 1: Gate Charge Test Circuit & Waveform

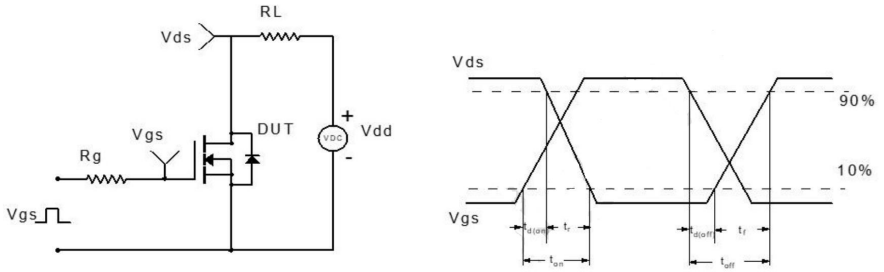


Figure 2: Resistive Switching Test Circuit & Waveform

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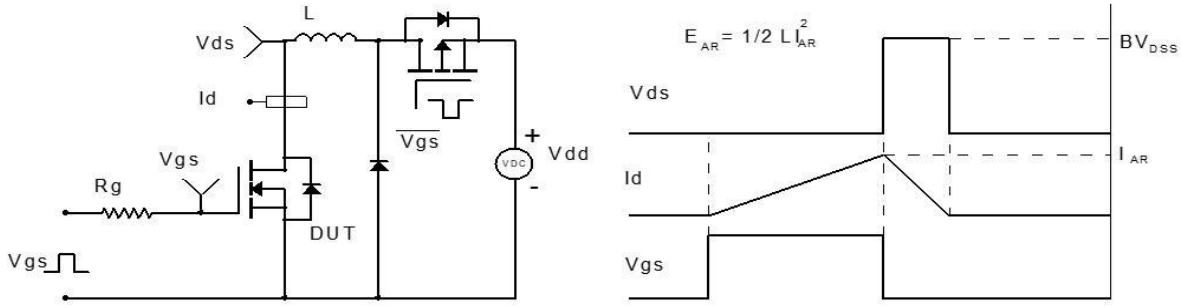


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

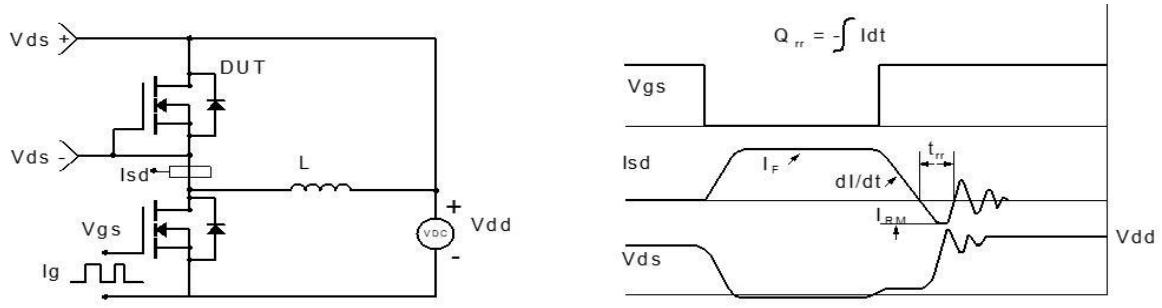
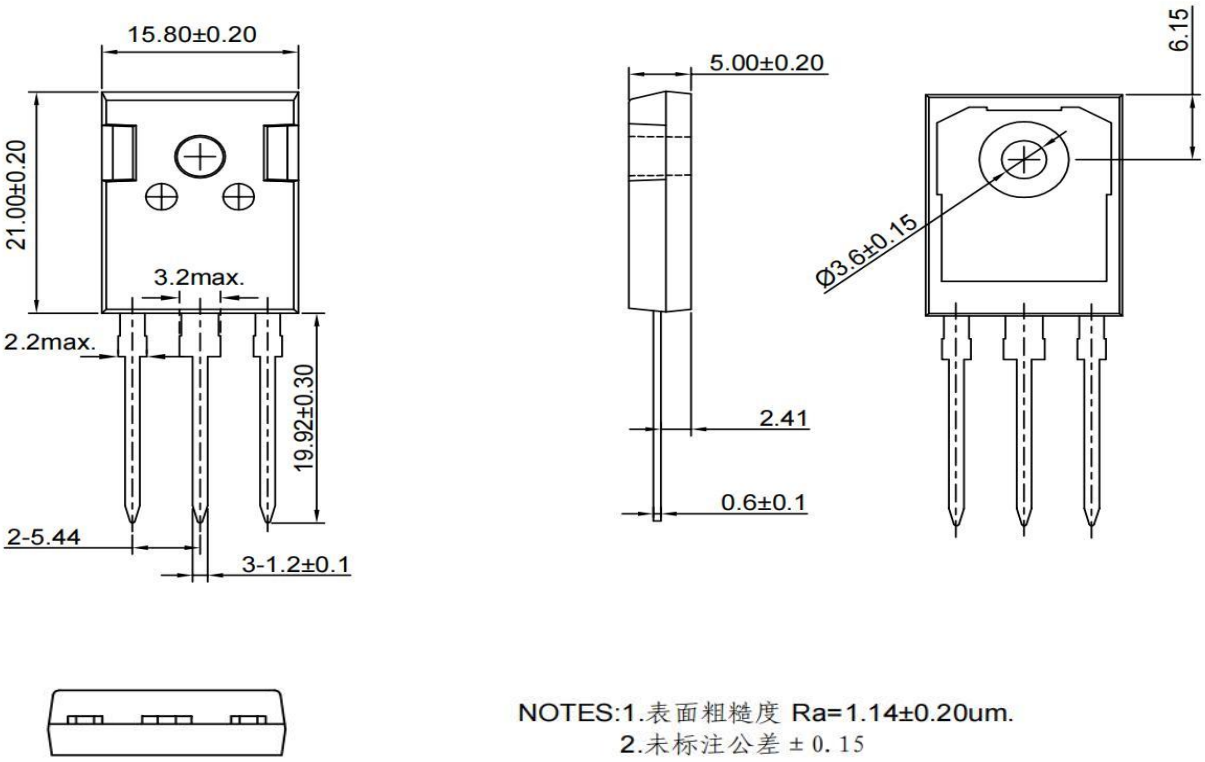


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(TO-247-3L)



NOTES:1.表面粗糙度 Ra=1.14±0.20um.
2.未标注公差 ± 0. 15

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