

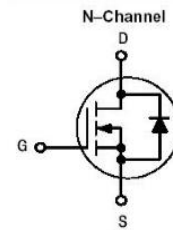
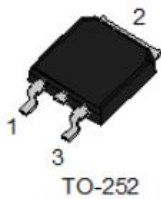


GENERAL DESCRIPTION

The RZC20N06 is the high cell density trenched N-Channel MOSFET, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The RZC20N06 meet the ROHS and Green Product requirement with full function reliability approved.

PIN CONFIGURATION



FEATURES

- 60V/20A, $R_{DS(ON)} = 31m\Omega$ $V_{GS} = 10V$ (TYP.)
- High Density Cell Design for Ultra Low $R_{DS(ON)}$
- Full Characterized Avalanche Voltage and Current
- Good Stability and Uniformity with High EAS
- Excellent Package for Good Heat Dissipation

APPLICTIONS

- Load Switch
- Battery Powered System
- Hard Switch and High Frequency Circuits
- UPS.

ORDERING INFORMATION

Part Number	Package	Top Marking
RZC20N06	TO-251	20N06A
RZC20N06	TO-252	20N06A

**MAXIMUM RATINGS** (Ta = 25°C)

Parameter	Symbol	Value	Units	
Drain to Source Voltage	V _{DSS}	60	V	
Gate to Source Voltage	V _{GSS}	±20	V	
Continuous Drain Current	25°C	I _D	20	A
	70°C		14	A
Pulsed Drain Current (note 1)	I _{D(pulse)}	80	A	
Maximum Power Dissipation	25°C	P _D	30	W
Operating Junction Temperature	T _J	150	°C	
Storage Temperature	T _{STG}	-55-+150	°C	
Lead Temperature for Soldering Purposes (1/8" from case for 10 s)	T _L	260	°C	

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

**ELECTRICAL CHARACTERISTICS** (TA = 25°C)

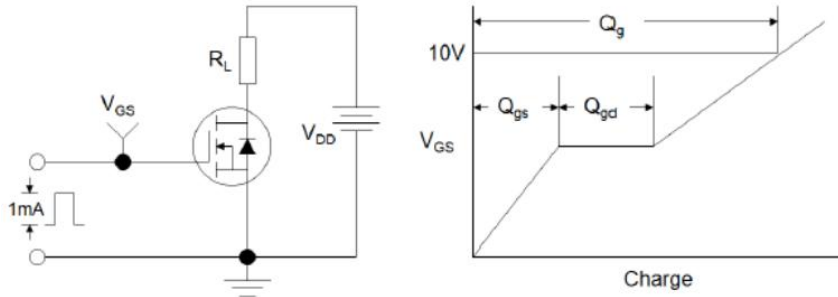
Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX	Units
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _{DS} =250uA	60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 60V, V _{GS} =0V T _J =25°C			1	uA
		V _{DS} =60V, V _{GS} =0V T _J =55°C			5	uA
Gate Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
Gate threshold voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	0.7	1.3	2.0	V
Drain to Source On-state Resistance _(note 2)	R _{DS(ON)}	V _{GS} =10V, I _D =20A		31	35	mΩ
Input Capacitance	C _{ISS}	V _{DS} =30V , V _{GS} =0V , f=1MHz		800		pF
Output Capacitance	C _{OSS}			68		pF
Reverse Transfer Capacitance	C _{RSS}			36		pF
Total Gate Charge (10V)	Q _G	V _{DD} =10V , V _{GS} =10V , I _D =20A		15		nC
Gate-Source Charge	Q _{GS}			2.4		nC
Gate-Drain Charge	Q _{GD}			2.5		nC
Turn-On Delay Time	T _{d(on)}	V _{DD} =30V, V _{GS} =10V, R _L =1.0Ω R _G =3Ω,		5		nS
Rise Time	T _r			39		
Turn-Off Delay Time	T _{d(off)}			19		
Fall Time	T _f			7		
Drain-Source Diode Forward Voltage	V _{SD}	I _S =20A, V _{GS} =0V, T _C =25°C			1.2	V
Maximum Continuous Drain-Source Diode Forward Current	I _D	T _C =25°C			20	A
Maximum Pulse Drain-Source Diode Forward Current	I _{DSM}				80	A
Reverse Recovery Time	t _{rr}	I _S =20A, T _J =25°C Di/Dt=100A/uS		23		nS
Reverse Recovery Charge	Q _{rr}			45		nC

Note : 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

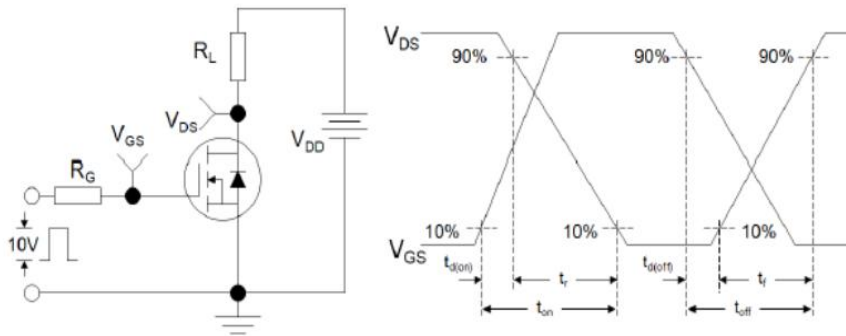
2. Pulse test: pulse width <= 300us, duty cycle <= 2%.



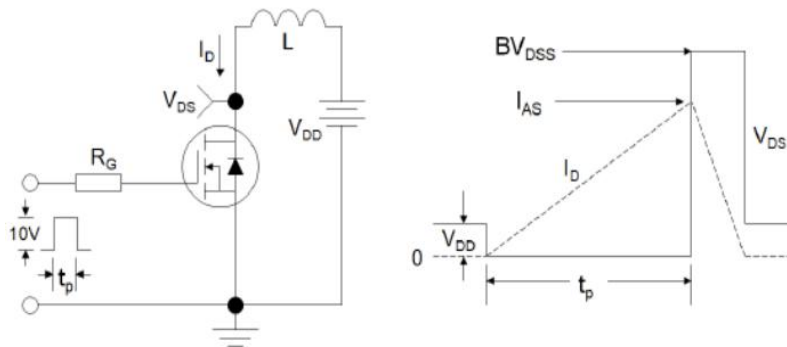
Gate Charge Test Circuit and Waveform



Resistive Switching Test Circuit and Waveform



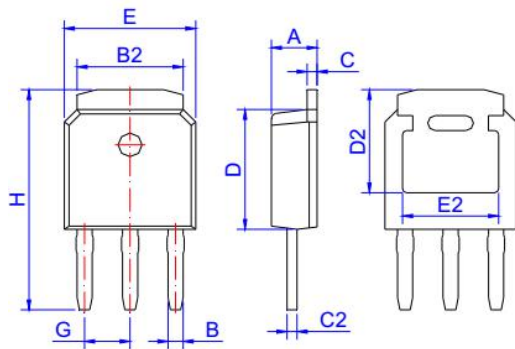
Unclamped Inductive Switching Test Circuit and Waveform





PACKAGE DIMENSIONS

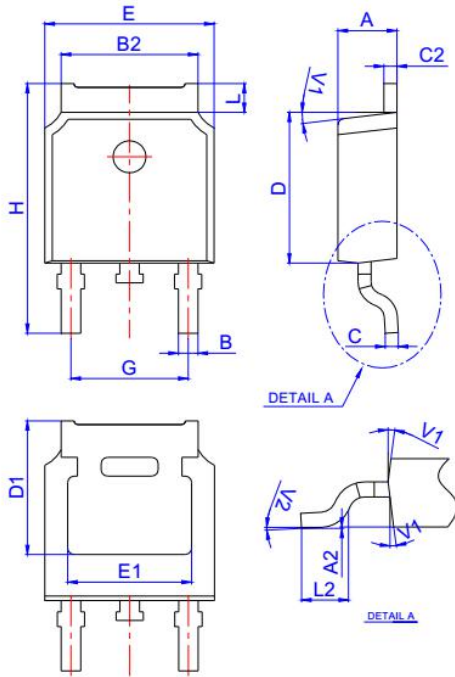
TO-251S



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10	2.30	2.50	0.083	0.091	0.098
B	0.66	0.76	0.86	0.026	0.030	0.034
B2	5.15	5.33	5.48	0.203	0.210	0.216
C	0.44	0.51	0.58	0.017	0.020	0.023
C2	0.44	0.51	0.58	0.017	0.020	0.023
D	5.90	6.10	6.30	0.232	0.240	0.248
D2	5.30 REF			0.209 REF		
E	6.40	6.60	6.80	0.252	0.260	0.268
E2	4.83 REF			0.190 REF		
G	2.19	2.29	2.39	0.086	0.090	0.094
H	10.60	11.20	11.80	0.417	0.441	0.465



TO-252



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°