

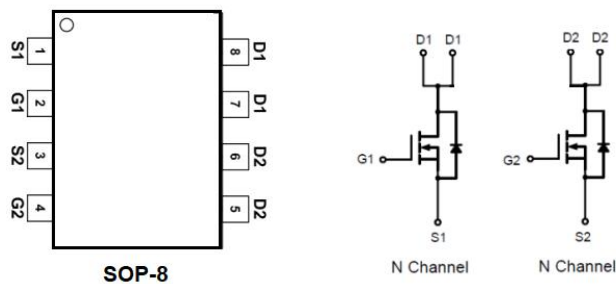


GENERAL DESCRIPTION

The RZC4204S is the high cell density trenched N-ch MOSFETs, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The RZC4204S meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

PIN CONFIGURATION



FEATURES

- 40V/8A, $R_{DS(ON)} = 11m\Omega$ $V_{GS} = 10V$ (TYP.)
- 40V/8A, $R_{DS(ON)} = 16m\Omega$ $V_{GS} = 4.5V$ (TYP.)
- 100% EAS Guaranteed
- Green Device Available
- Supper Low Gate Charge
- Excellent $C_{dv/dt}$ effect decline
- Advanced high cell density Trench technology
- SOP-8 package design

APPLICTIONS

- Power Management in Notebook Computer
- Portable Equipment
- Battery Powered Systems

ORDERING INFORMATION

Part Number	Package	Top Marking	Packing
RZC4204S	SOP-8	S4204	3000PCS/Real

**MAXIMUM RATINGS** ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Value		Units	
		N1	N2		
Drain to Source Voltage	V_{DSS}	40	40	V	
Gate to Source Voltage	V_{GSS}	± 20	± 20	V	
Continuous Drain Current	ID	25 $^\circ\text{C}$	10	10	A
		85 $^\circ\text{C}$	8	8	A
Pulsed Drain Current	$I_{D(pulse)}$	34	34	A	
Single Pulse Avalanche Energy	EAS	31		mJ	
Avalanche Current	IAS	25		A	
Maximum Power Dissipation	$P_D(25^\circ\text{C})$	1.5		W	
Operating Junction Temperature	T_J	+150		$^\circ\text{C}$	
Storage Temperature	T_{STG}	-55-+150		$^\circ\text{C}$	
Lead Temperature for Soldering Purposes(1/8" from case for 10 s)	T_L	260		$^\circ\text{C}$	



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	40			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =32V, V _{GS} =0V T _J =25°C			1	uA
		V _{DS} =32V, 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	1.2	1.6	2.5	V
Drain to Source On-state Resistance _(note 2)	R _{DS(ON)}	V _{GS} =10V, I _D =8A		11	15	mΩ
		V _{GS} = 4.5V, I _D =6A		16	20	mΩ
Drain-Source Diode Forward Voltage	V _{SD}	I _S =1A, V _{GS} =0V			1.2	V
Gate Resistance	R _g	V _{DS} =0V, V _{GS} =0V, f=1MHz		2.1		Ω
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHz		1314		pF
Output Capacitance	C _{oss}			120		
Reverse Transfer Capacitance	C _{rss}			88		
Total Gate Charge (10V)	Q _G	V _{DD} =20V, V _{GS} =4.5V, I _D =8A		10.7		nC
Gate-Source Charge	Q _{GS}			3.3		
Gate-Drain Charge	Q _{GD}			4.2		
Turn-On Delay Time	T _{d(on)}	V _{DD} =12V, V _{GS} =10V, R _G =3.3Ω, I _D =6A		8.6		nS
Rise Time	T _r			3.4		
Turn-Off Delay Time	T _{d(off)}			24.8		
Fall Time	T _f			2.2		

DIODE CHARACTERISTICS

Parameter	Symbol	Test Conditions	MIN	TYP	MAX	Units
Drain-Source Diode Forward Voltage	V _{SD}	I _S =1A, V _{GS} =0V			1.0	V
Continuous Source Current ^{1,5}	I _S	V _G =V _D =0V, Force Current			8	A



TYPICAL CHARACTERISTICS

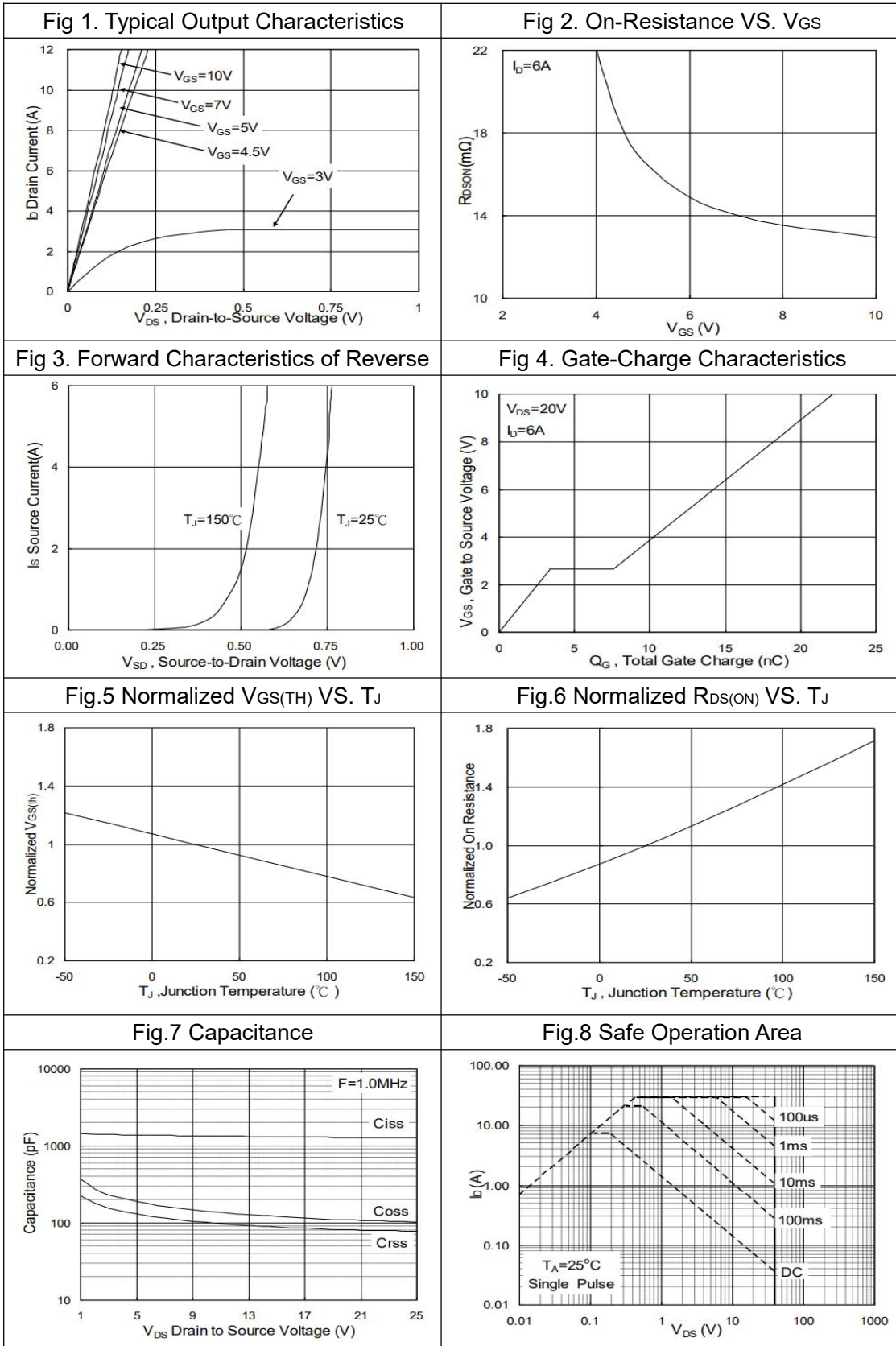
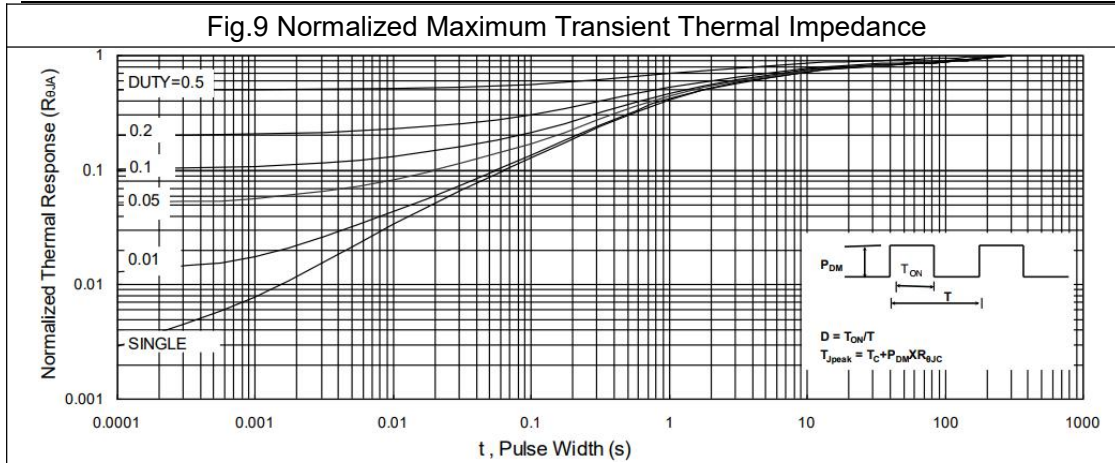
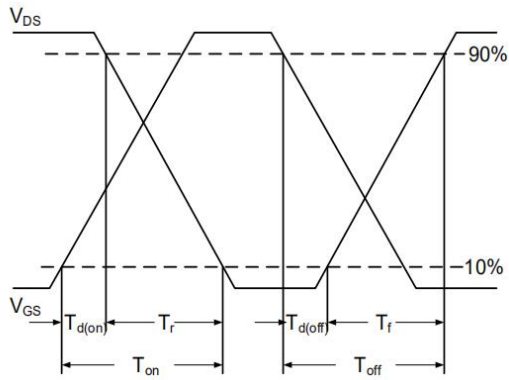




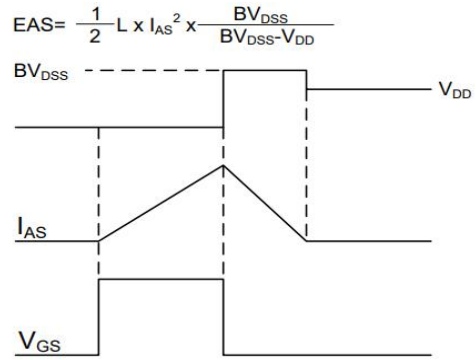
Fig.9 Normalized Maximum Transient Thermal Impedance



Switching Time Waveform



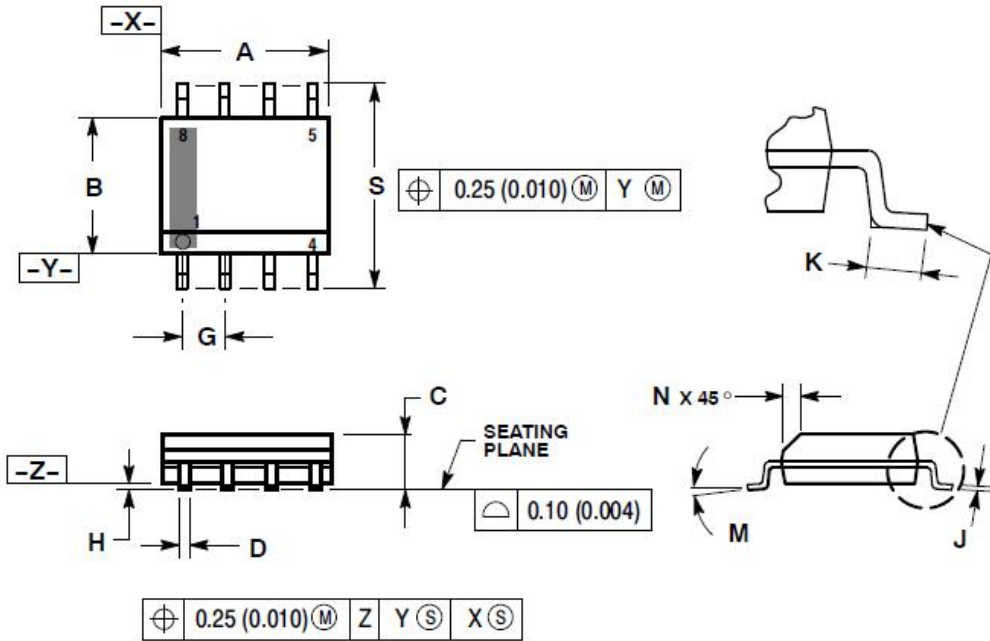
Unclamped Inductive Switching Waveform



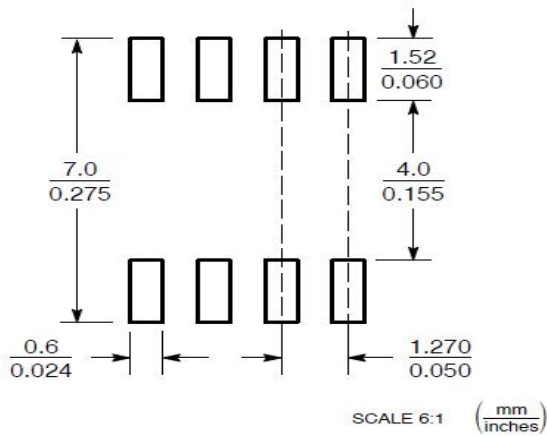


PACKAGE DIMENSIONS

SOP-8



SOLDERING FOOTPRINT*



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.80	5.00	0.189	0.197
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.053	0.069
D	0.33	0.51	0.013	0.020
G	1.27 BSC		0.050 BSC	
H	0.10	0.25	0.004	0.010
J	0.19	0.25	0.007	0.010
K	0.40	1.27	0.016	0.050
M	0° - 8°		0° - 8°	
N	0.25	0.50	0.010	0.020
S	5.80	6.20	0.228	0.244