

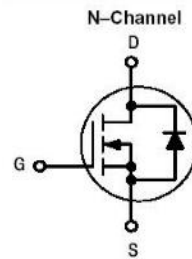


GENERAL DESCRIPTION

The RZC4005D is the high cell density trenched N-Channel MOSFETs, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The RZC4005D meet the ROHS and Green Product requirement 100% EAS guaranteed with full function reliability approved.

PIN CONFIGURATION



FEATURES

- 40V/75A, $R_{DS(ON)} = 5m\Omega$ $V_{GS} = 10V$ (TYP.)
- 40V/75A, $R_{DS(ON)} = 7m\Omega$ $V_{GS} = 4.5V$ (TYP.)
- 100% EAS Guaranteed
- Green Device Available
- Supper Low Gate Charge
- Excellent Cdv/dt effect decline
- Advanced high cell density Trench technology
- TO-252 package design

APPLICTIONS

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch

ORDERING INFORMATION

Part Number	Package	Top Marking	Packing
RZC4005D	TO-252	D4005	2500PCS/Real

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

Parameter	Symbol	Value	Units	
Drain to Source Voltage	V_{DSS}	40	V	
Gate to Source Voltage	V_{GSS}	± 20	V	
Continuous Drain Current	25°C	I_D	75	A
	70°C		58	A
Pulsed Drain Current	$I_{D(pulse)}$	150	A	
Avalanche Current	I_{AS}	47	A	
Maximum Power Dissipation	25°C	P_D	52	W
Single Pulse Avalanche Energy	EAS		110	mJ
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	$^\circ\text{C}$	

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	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	1.0		2.5	V
Drain to Source On-state Resistance	R _{DS(ON)}	V _{GS} =10V, I _D = 5.0A		5	6.5	mΩ
		V _{GS} = 4.5V, I _D = 5.0A		7	9	mΩ
Drain-Source Diode Forward Voltage	V _{SD}	I _S =1A, V _{GS} =0V		0.8	1	V
Gate Resistance	R _g	V _{DS} =0V, V _{GS} =0V , f=1MHz		1.4		Ω
Input Capacitance	C _{ISS}	V _{DS} =15V , V _{GS} =0V , f=1MHz		3354		pF
Output Capacitance	C _{OSS}			275		
Reverse Transfer Capacitance	C _{RSS}			204		
Total Gate Charge (10V)	Q _G	V _{DD} =20V , V _{GS} =4.5V , I _D =12A		28		nC
Gate-Source Charge	Q _{GS}			7.9		
Gate-Drain Charge	Q _{GD}			12.5		
Turn-On Delay Time	T _{d(on)}	V _{DD} =15V, V _{GS} =10V R _G =3.3Ω, I _D =1A		20.2		nS
Rise Time	T _r			11.8		
Turn-Off Delay Time	T _{d(off)}			84.8		
Fall Time	T _f			8.6		

Note : 1. Pulse test: pulse width <= 300us, duty cycle<= 2%.

2. Static parameters are based on package level with recommended wire-bonding.



TYPICAL CHARACTERISTICS

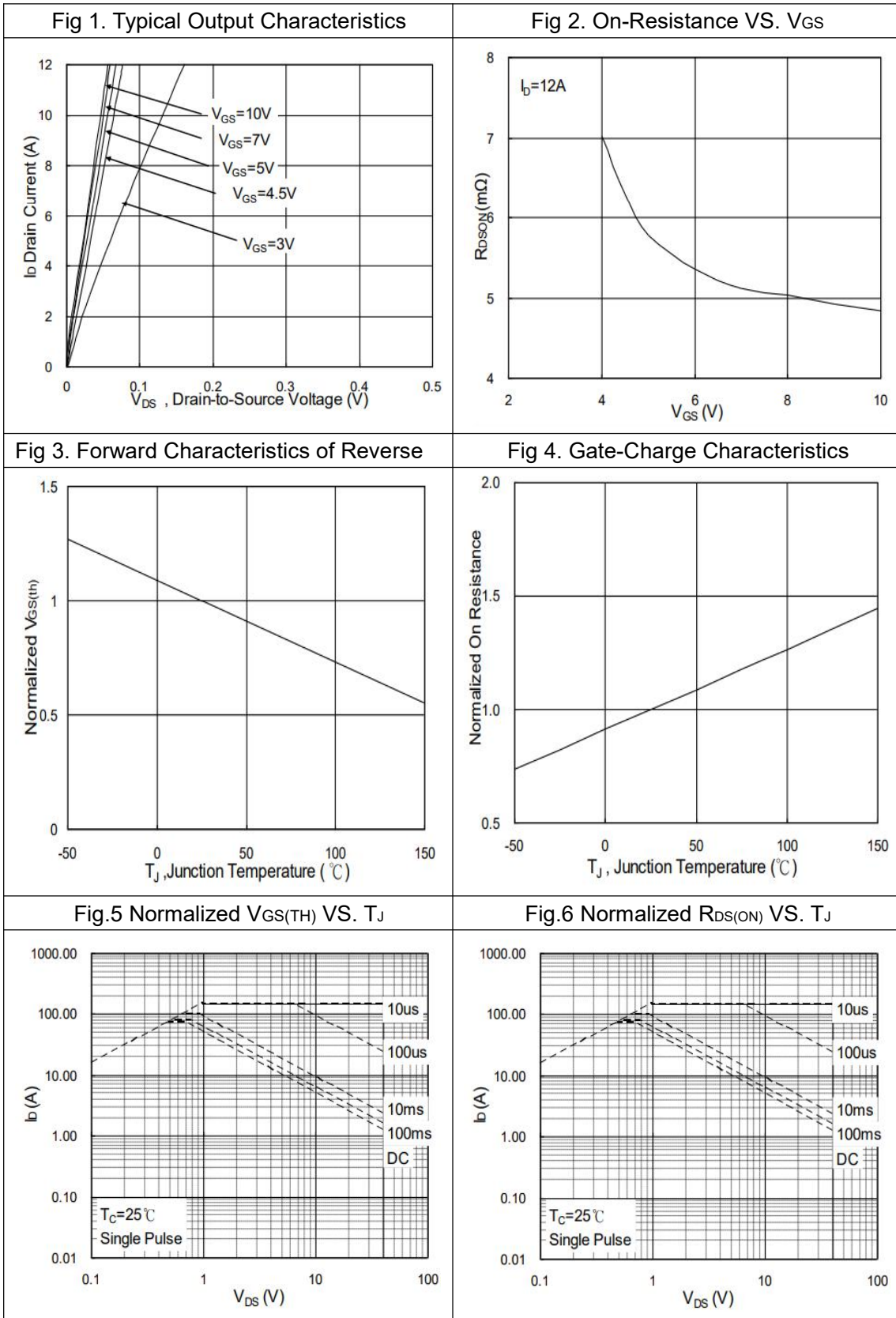
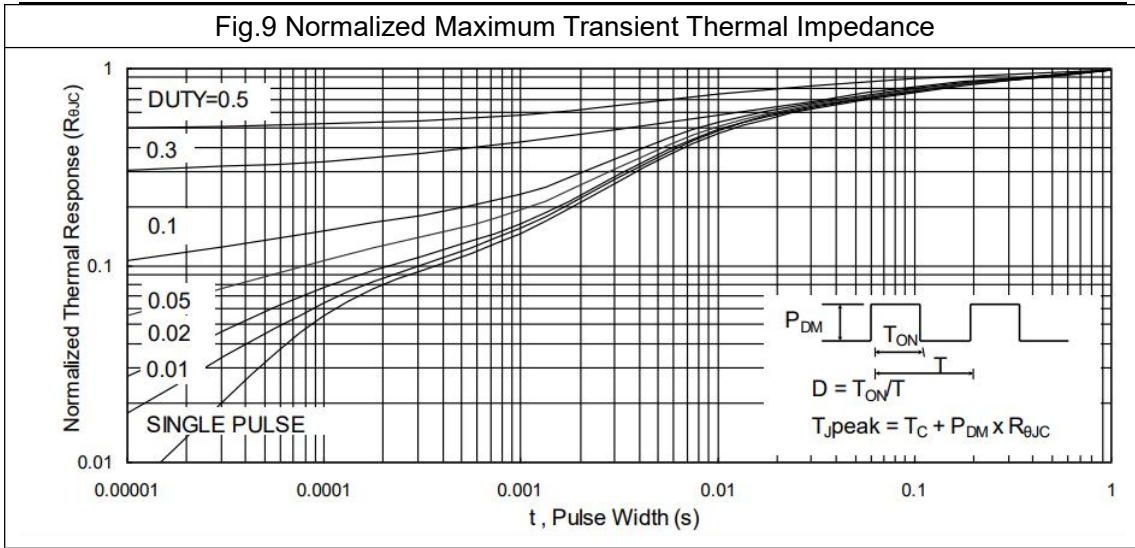
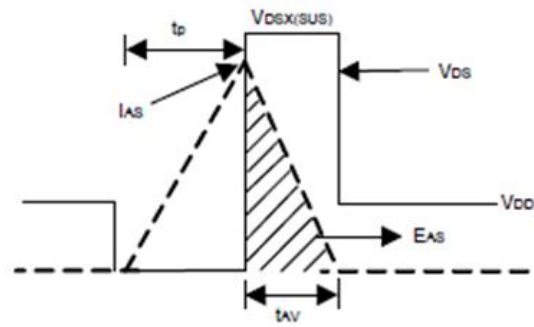
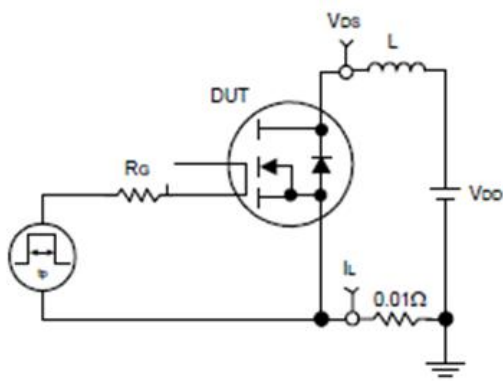




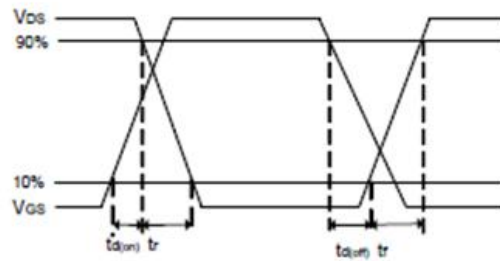
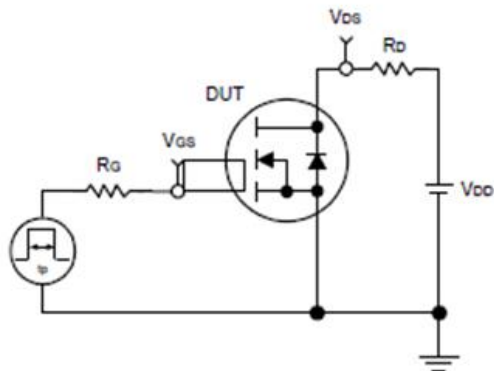
Fig.9 Normalized Maximum Transient Thermal Impedance



Avalanche Test Circuit and Waveforms



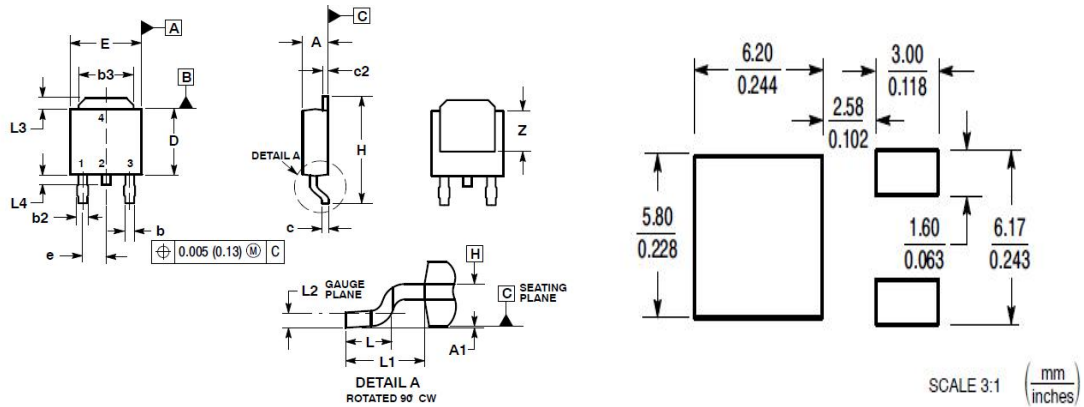
Switching Time Test Circuit and Waveforms





PACKAGE DIMENSIONS

TO-252



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.086	0.094	2.18	2.38
A1	0.000	0.005	0.00	0.13
b	0.025	0.035	0.63	0.89
b2	0.030	0.045	0.76	1.14
b3	0.180	0.215	4.57	5.46
c	0.018	0.024	0.46	0.61
c2	0.018	0.024	0.46	0.61
D	0.235	0.245	5.97	6.22
E	0.250	0.265	6.35	6.73
e	0.090 BSC		2.29 BSC	
H	0.370	0.410	9.40	10.41
L	0.055	0.070	1.40	1.78
L1	0.108 REF		2.74 REF	
L2	0.020 BSC		0.51 BSC	
L3	0.035	0.050	0.89	1.27
L4	---	0.040	---	1.01
Z	0.155	---	3.93	---