

TDSEMIC

拓電半導體

自主封測 品質把控 售後保障

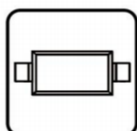
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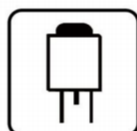
電源管理



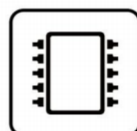
顯示驅動



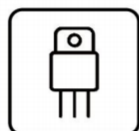
二三極管



LDO穩壓器



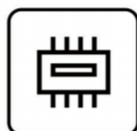
觸摸芯片



MOS管



運算放大器



存儲芯片



MCU



串口通信

TD4953

產品規格說明書

General Description

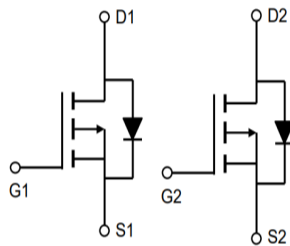
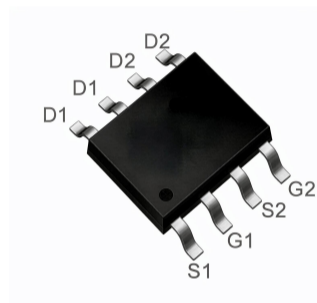
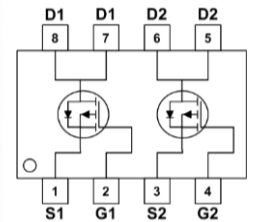
The TD4953 is the highest performance trench N-ch MOSFETs with extreme high cell density, which provide excellent RDSON and gate charge for most of the small power switching and load switch applications. The meet the RoHS and Product requirement with full function reliability approved.

Application

Battery protection

Load switch

Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Package	Marking	QTY(PCS)	Packing method
TD4953	SOP-8L	4953	3000	Reel

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	-6.5	A
Drain Current-Pulsed (Note 1)	I_{DM}	-20	A
Maximum Power Dissipation	P_D	2.6	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	°C
Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	49	°C/W

General Features

$V_{DS} = -30V$ $I_D = -6.5 A$

$R_{DS(ON)} < -45m\Omega$ @ $V_{GS}=10 V$

$R_{DS(ON)} < -65m\Omega$ @ $V_{GS}=4.5V$

SOP-8L Pin Configuration

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =-250μA	-30	-33	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-24V,V _{GS} =0V	-	-	-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V,V _{DS} =0V	-	-	±100	nA
On Characteristics ^(Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =-250μA	-1	-1.6	-3	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-6.5A	-	37	45	m
		V _{GS} =-4.5V, I _D =-4.2A	-	50	65	m
Forward Transconductance	g _{FS}	V _{DS} =-15V,I _D =-4.5A	4	7	-	S
Dynamic Characteristics ^(Note4)						
Input Capacitance	C _{Iss}	V _{DS} =-15V,V _{GS} =0V, F=1.0MHz	-	540	-	PF
Output Capacitance	C _{Oss}		-	150	-	PF
Reverse Transfer Capacitance	C _{rss}		-	75	-	PF
Switching Characteristics ^(Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =-15V, I _D =-1A, V _{GS} =-10V,R _{GEN} =6	-	8	-	nS
Turn-on Rise Time	t _r		-	14	-	nS
Turn-Off Delay Time	t _{d(off)}		-	18	-	nS
Turn-Off Fall Time	t _f		-	10	-	nS
Total Gate Charge	Q _g	V _{DS} =-15V,I _D =-6.5A,V _{GS} =-10V	-	12	-	nC
Gate-Source Charge	Q _{gs}		-	2.4	-	nC
Gate-Drain Charge	Q _{gd}		-	3.2	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage ^(Note 3)	V _{SD}	V _{GS} =0V,I _S =-6.5A	-	-	-1.2	V

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production

Typical Electrical and Thermal Characteristics

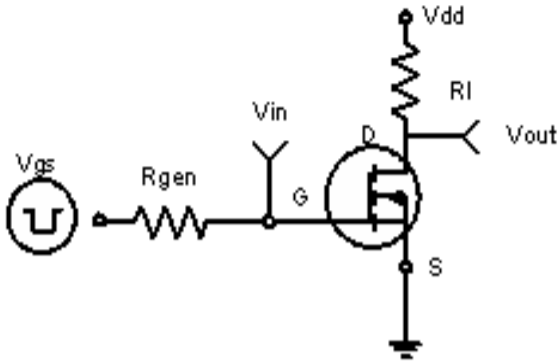


Figure 1: Switching Test Circuit

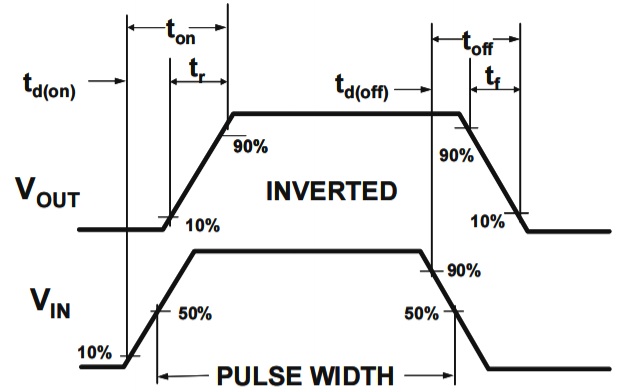


Figure 2: Switching Waveforms

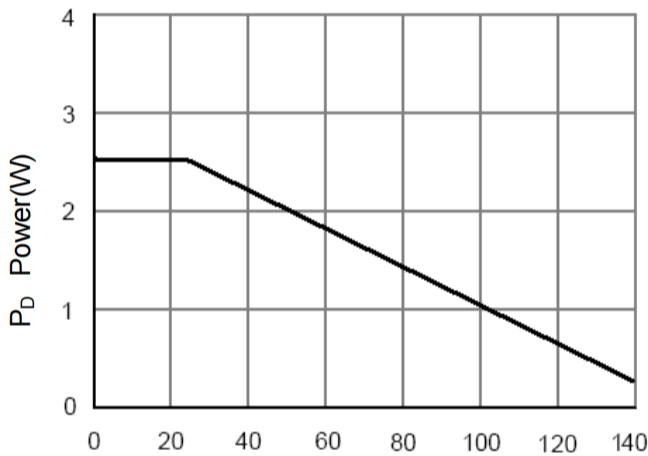


Figure 3 Power Dissipation

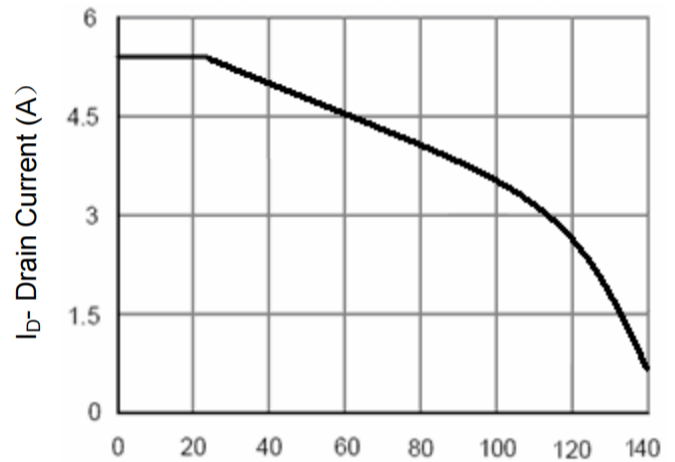


Figure 4 Drain Current

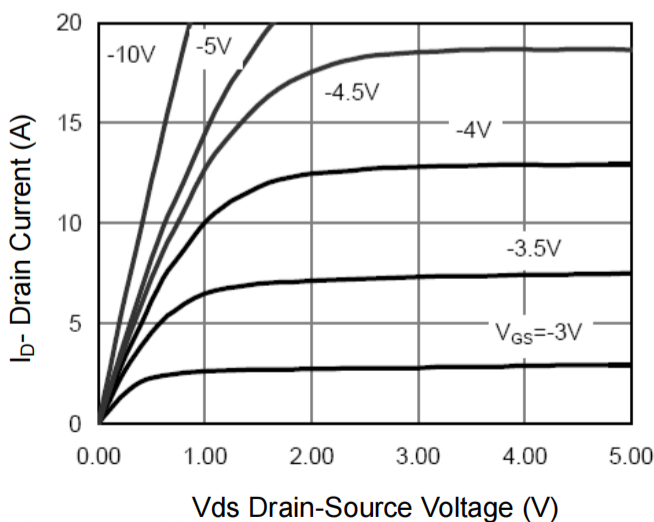


Figure 5 Output Characteristics

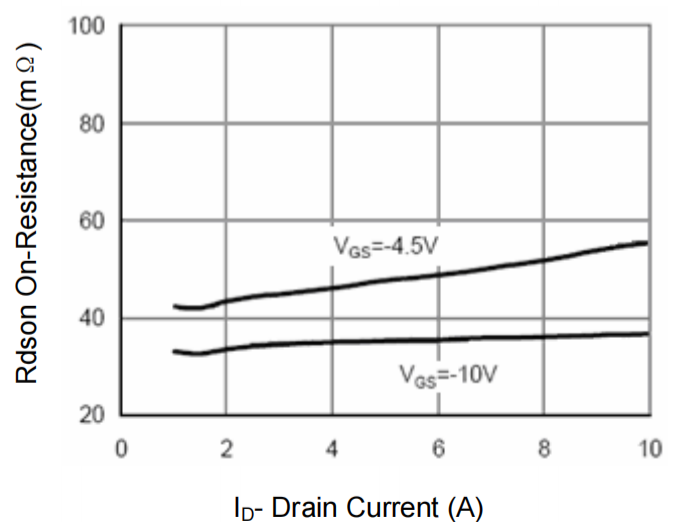
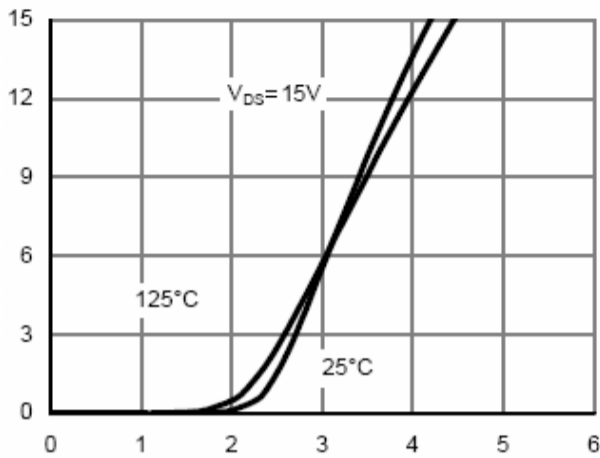
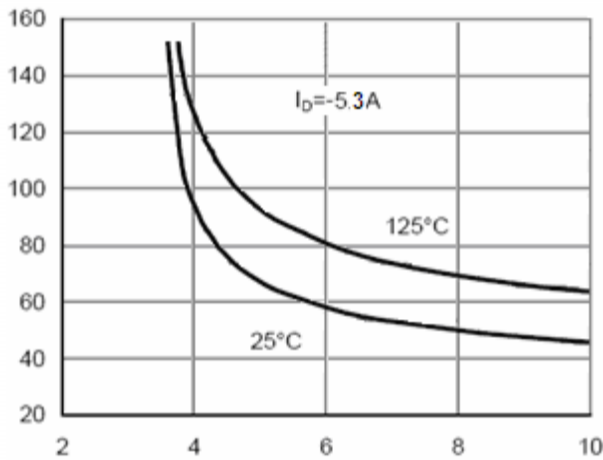


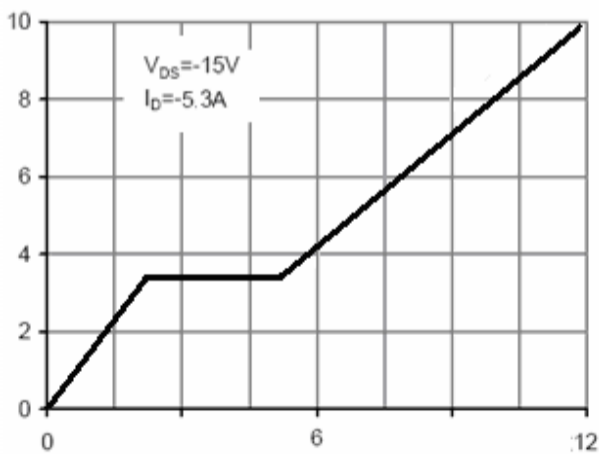
Figure 6 Drain-Source On-Resistance



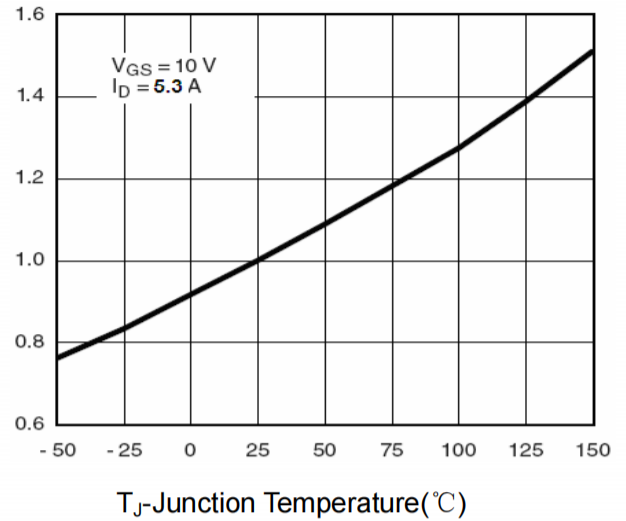
V_{GS} Gate-Source Voltage (V)
Figure 7 Transfer Characteristics



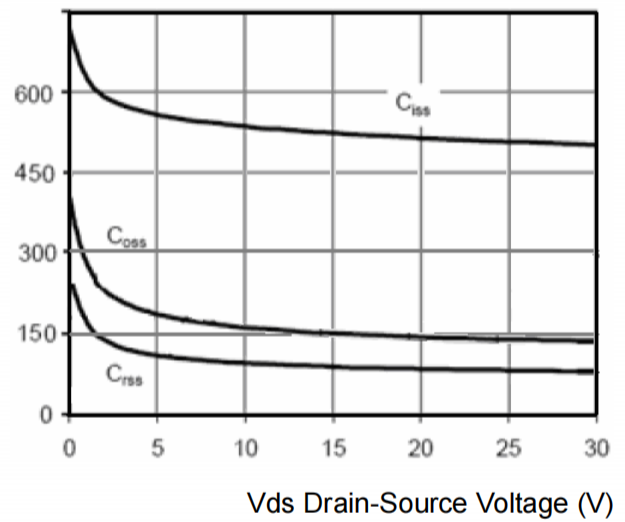
V_{GS} Gate-Source Voltage (V)
Figure 9 Rdson vs Vgs



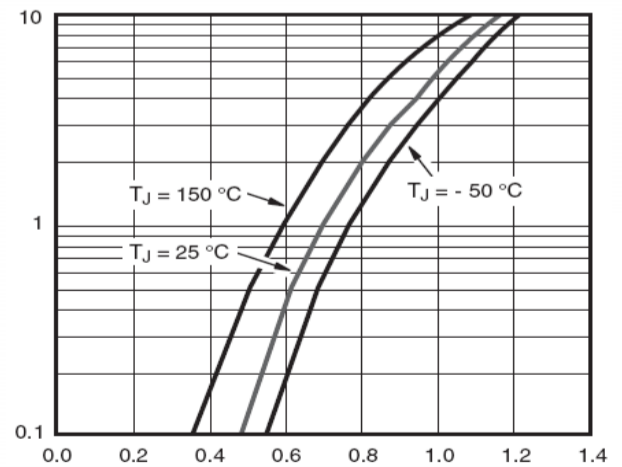
Q_g Gate Charge (nC)
Figure 11 Gate Charge



T_J -Junction Temperature($^\circ C$)
Figure 8 Drain-Source On-Resistance



V_{DS} Drain-Source Voltage (V)
Figure 10 Capacitance vs Vds



V_{SD} Source-Drain Voltage (V)
Figure 12 Source- Drain Diode Forward

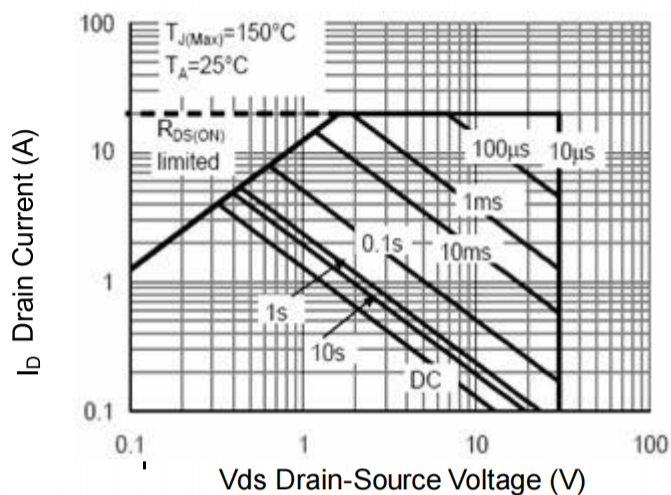


Figure 13 Safe Operation Area

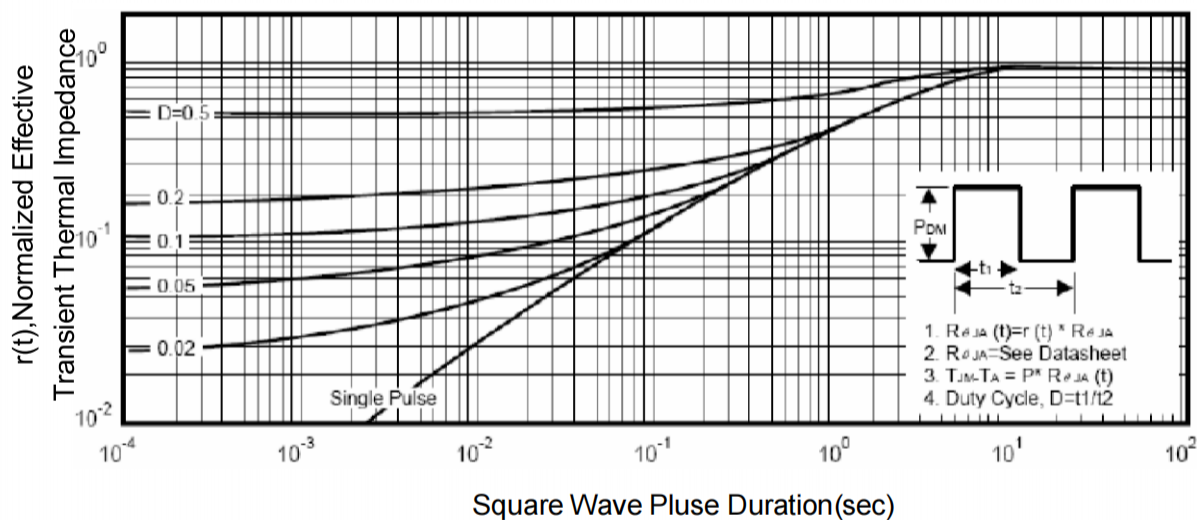
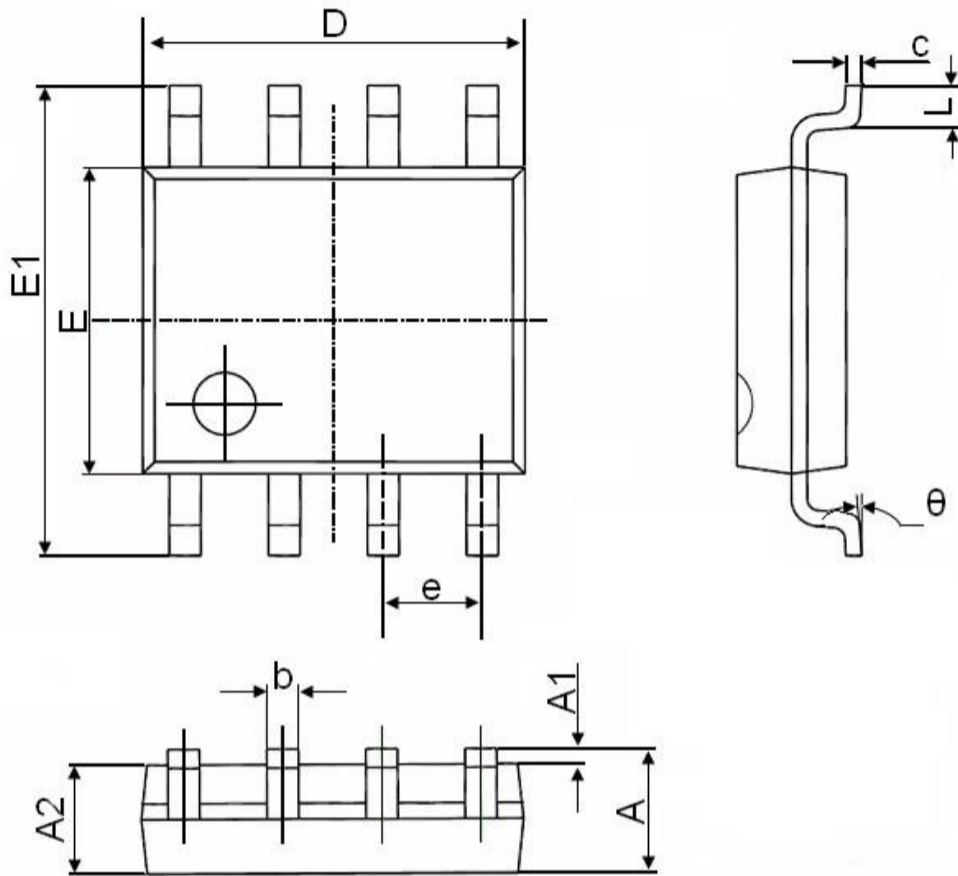


Figure 14 Normalized Maximum Transient Thermal Impedance

SOP8 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050