

20V Dual N-Channel MOSFET



SOP-8

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Pin Definition:

1. Source 1	8. Drain 1
2. Gate 1	7. Drain 1
3. Source 2	6. Drain 2

5. Drain 2

PRODUCT SUMMARY

V _{DS} (V)	$R_{DS(on)}(m\Omega)$	I _D (A)
20	30 @ V _{GS} = 4.5V	6.0
20	40 @ V _{GS} = 2.5V	5.2

Features

- Advance Trench Process Technology
- High Density Cell Design for Ultra Low On-resistance

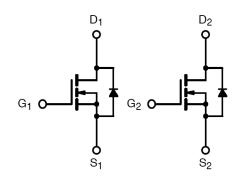
Application

- Specially Designed for Li-on Battery Packs
- Battery Switch Application

Ordering Information

Part No.	Package	Packing
TSM9926DCS RL	SOP-8	2.5Kpcs / 13" Reel

Block Diagram



Dual N-Channel MOSFET

Absolute Maximum Rating (Ta = 25°C unless otherwise noted)

Parameter		Symbol	Limit	Unit	
Drain-Source Voltage		V_{DS}	20	V	
Gate-Source Voltage		V_{GS}	±12	V	
Continuous Drain Current		I _D	6	Α	
Pulsed Drain Current		I _{DM}	30	Α	
Continuous Source Current (Diode Conduction) ^{a,b}		I _S	1.7	Α	
Maximum Power Dissipation	Ta = 25°C	В	1.6	- W	
	Ta = 75°C	$ P_{D}$	1.1		
Operating Junction Temperature		TJ	+150	°C	
Operating Junction and Storage Temperature Range		T _J , T _{STG}	-55 to +150	°C	

Thermal Performance

Parameter	Symbol	Limit	Unit
Junction to Case Thermal Resistance	R⊖ _{JC}	40	°C/W
Junction to Ambient Thermal Resistance (PCB mounted)	RO _{JA}	77	°C/W

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Notes:

- a. Pulse width limited by the Maximum junction temperature
- b. Surface Mounted on FR4 Board, t ≤ 5 sec.

Version: A07



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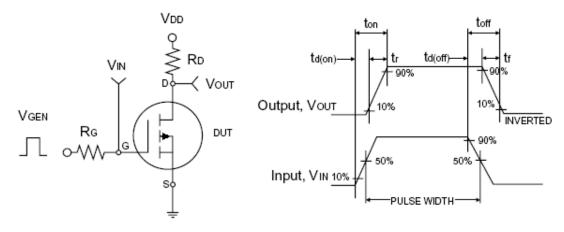


Electrical Specifications

Parameter	Conditions	Symbol	Min	Тур	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250uA$	BV _{DSS}	20		-	V
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_{D} = 250uA$	$V_{GS(TH)}$	0.6			V
Gate Body Leakage	$V_{GS} = \pm 12V, V_{DS} = 0V$	I _{GSS}			±100	nA
Zero Gate Voltage Drain Current	$V_{DS} = 20V, V_{GS} = 0V$	I _{DSS}			1.0	uA
On-State Drain Current	$V_{DS} = 5V, V_{GS} = 4.5V$	I _{D(ON)}	30			Α
Drain-Source On-State Resistance	$V_{GS} = 4.5V, I_D = 6.0A$			21	30	0
Drain-Source On-State Resistance	ain-Source On-State Resistance $V_{GS} = 2.5V$, $I_D = 5.2A$	1	30	40	mΩ	
Forward Transconductance	$V_{DS} = 10V, I_D = 6A$	g _{fs}	1	30	I	S
Diode Forward Voltage	$I_S = 1.7A, V_{GS} = 0V$	V_{SD}	1	0.7	1.2	V
Dynamic ^b						
Total Gate Charge	$V_{DS} = 10V, I_D = 6A,$	Q_g		4.86		
Gate-Source Charge	$V_{DS} = 10V, I_D = 6A,$ $V_{GS} = 4.5V$	Q_gs		0.92		nC
Gate-Drain Charge	V _{GS} = 4.3 V	Q_{gd}		1.4		
Input Capacitance	$V_{DS} = 8V, V_{GS} = 0V,$	C _{iss}		562		
Output Capacitance	$v_{DS} = 6V, v_{GS} = 0V,$ - f = 1.0MHz	C _{oss}		106		pF
Reverse Transfer Capacitance	1 - 1.0101112	C _{rss}		75		
Switching ^c						
Turn-On Delay Time	\/ - 40\/ D - 400	$t_{d(on)}$		8.1		
Turn-On Rise Time	$V_{DD} = 10V, R_L = 10\Omega,$	t _r		9.95	-	nS
Turn-Off Delay Time	$I_D = 1A, V_{GEN} = 4.5V,$ $R_G = 6\Omega$	$t_{d(off)}$		21.85	-	113
Turn-Off Fall Time	17G - 022	t _f		5.35		

Notes:

- a. pulse test: PW ≤300µS, duty cycle ≤2%
- b. For DESIGN AID ONLY, not subject to production testing.
- b. Switching time is essentially independent of operating temperature.



Switching Test Circuit

Switchin Waveforms

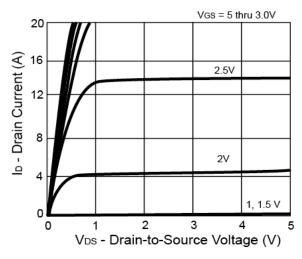


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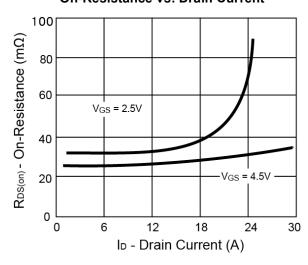


Electrical Characteristics Curve (Ta = 25°C, unless otherwise noted)

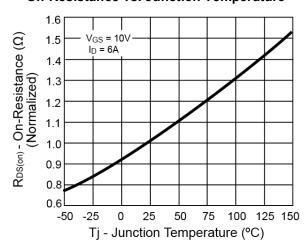




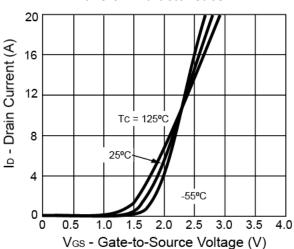
On-Resistance vs. Drain Current



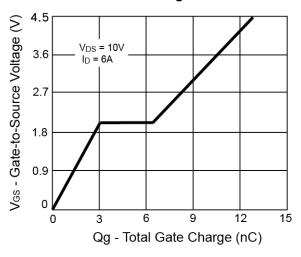
On-Resistance vs. Junction Temperature



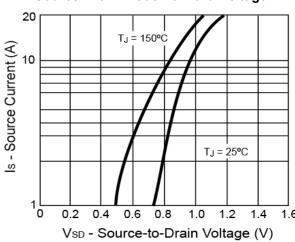
Transfer Characteristics



Gate Charge



Source-Drain Diode Forward Voltage



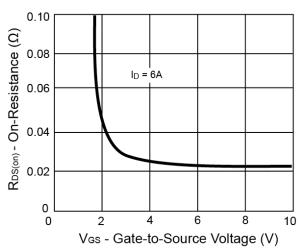


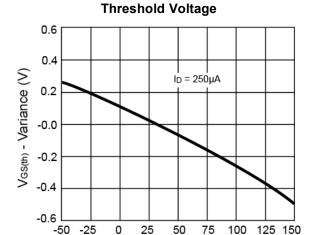
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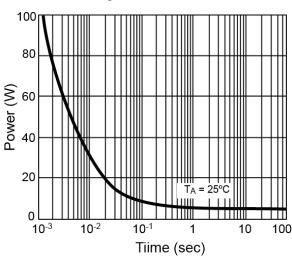
On-Resistance vs. Gate-Source Voltage



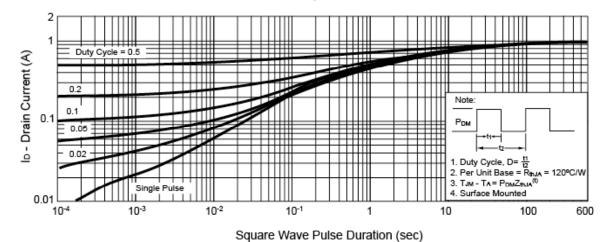


Tj - Junction Temperature (°C)

Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient

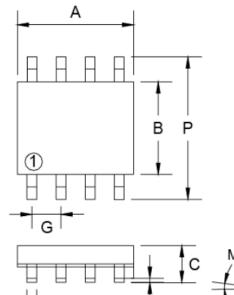




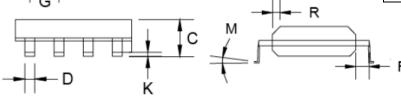
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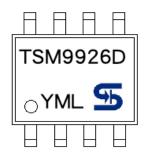
SOP-8 Mechanical Drawing



SOP-8 DIMENSION					
DIM	MILLIMETERS		INCHES		
DIIVI	MIN	MAX	MIN	MAX.	
Α	4.80	5.00	0.189	0.196	
В	3.80	4.00	0.150	0.157	
С	1.35	1.75	0.054	0.068	
D	0.35	0.49	0.014	0.019	
F	0.40	1.25	0.016	0.049	
G	1.27BSC 0.0		0.05	BSC	
K	0.10	0.25	0.004	0.009	
M	0°	7°	0°	7°	
Р	5.80	6.20	0.229	0.244	
R	0.25	0.50	0.010	0.019	



Marking Diagram



Y = Year Code

M = Month Code

(A=Jan, B=Feb, C=Mar, D=Apl, E=May, F=Jun, G=Jul, H=Aug,

I=Sep, J=Oct, K=Nov, L=Dec)

L = Lot Code



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