



THE DATASHEET OF TSM9926DCS RLG



Dual N-Channel Power MOSFET

20V, 6.0A, 30mΩ

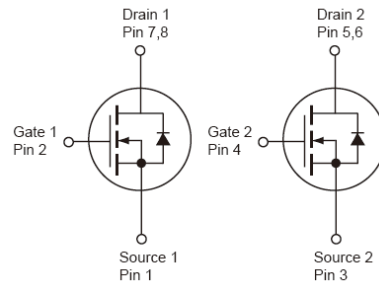
FEATURES

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

APPLICATION

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

KEY PERFORMANCE PARAMETERS		
PARAMETER	VALUE	UNIT
V_{DS}	20	V
$R_{DS(on)}$ (max)	$V_{GS} = 4.5V$	30
	$V_{GS} = 2.5V$	40
Q_g	4.86	nC



Notes: Moisture sensitivity level: level 3. Per J-STD-020

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$ unless otherwise noted)			
PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current ^(Note 1)	I_D	6	A
Pulsed Drain Current ^(Note 2)	I_{DM}	30	A
Continuous Source Current (Diode Conduction)	I_S	1.7	A
Total Power Dissipation	P_{DTOT}	$T_A = 25^\circ C$	1.6
		$T_A = 75^\circ C$	1.1
Operating Junction and Storage Temperature Range	T_J, T_{STG}	- 55 to +150	$^\circ C$

THERMAL PERFORMANCE			
PARAMETER	SYMBOL	LIMIT	UNIT
Junction to Case Thermal Resistance	$R_{\theta JC}$	40	$^\circ C/W$
Junction to Ambient Thermal Resistance	$R_{\theta JA}$	77	$^\circ C/W$

Notes: $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistances. The case thermal reference is defined at the solder mounting surface of the drain pins. $R_{\theta JA}$ is guaranteed by design while $R_{\theta CA}$ is determined by the user's board design. $R_{\theta JA}$ shown below for single device operation on FR-4 PCB in still air.

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
Static (Note 3)						
Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	BV_{DSS}	20	--	--	V
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	$V_{GS(TH)}$	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	μA
On-State Drain Current	$V_{DS} = 5V, V_{GS} = 4.5V$	$I_{D(ON)}$	30	--	--	A
Drain-Source On-State Resistance	$V_{GS} = 4.5V, I_D = 6.0A$	$R_{DS(ON)}$	--	21	30	m Ω
	$V_{GS} = 2.5V, I_D = 5.2A$		--	30	40	
Forward Transconductance	$V_{DS} = 10V, I_D = 6A$	g_{fs}	--	30	--	S
Dynamic (Note 4)						
Total Gate Charge	$V_{DS} = 10V, I_D = 6A,$ $V_{GS} = 4.5V$	Q_g	--	4.86	--	nC
Gate-Source Charge		Q_{gs}	--	0.92	--	
Gate-Drain Charge		Q_{gd}	--	1.4	--	
Input Capacitance	$V_{DS} = 8V, V_{GS} = 0V,$ $F = 1.0\text{MHz}$	C_{iss}	--	562	--	pF
Output Capacitance		C_{oss}	--	106	--	
Reverse Transfer Capacitance		C_{rss}			75	
Switching (Note 5)						
Turn-On Delay Time	$V_{DD} = 10V,$ $R_{GEN} = 6\Omega,$ $I_D = 1A, V_{GS} = 4.5V,$	$t_{d(on)}$	--	8.1	--	ns
Turn-On Rise Time		t_r	--	9.95	--	
Turn-Off Delay Time		$t_{d(off)}$	--	21.85	--	
Turn-Off Fall Time		t_f	--	5.35	--	
Source-Drain Diode (Note 3)						
Forward Voltage	$I_S = 1.7A, V_{GS} = 0V$	V_{SD}	--	0.7	1.2	V

Notes:

1. Pulse width limited by the Maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 5$ sec.
3. Pulse test: $PW \leq 300\mu s$, duty cycle $\leq 2\%$.
4. For DESIGN AID ONLY, not subject to production testing.
5. Switching time is essentially independent of operating temperature.

ORDERING INFORMATION

PART NO.	PACKAGE	PACKING
TSM9926DCS RLG	SOP-8	2,500pcs / 13" Reel

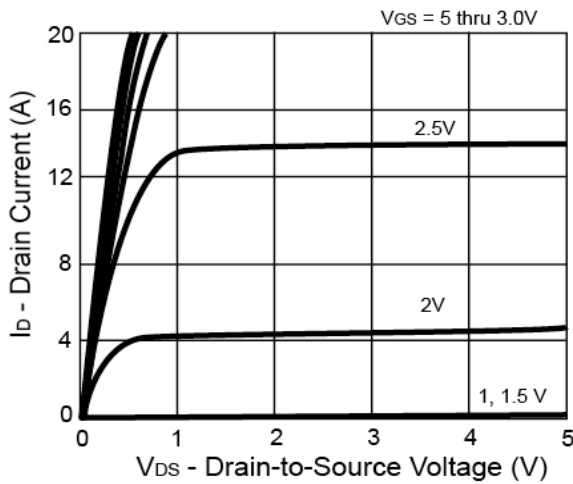
Note:

1. Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
2. Halogen-free according to IEC 61249-2-21 definition

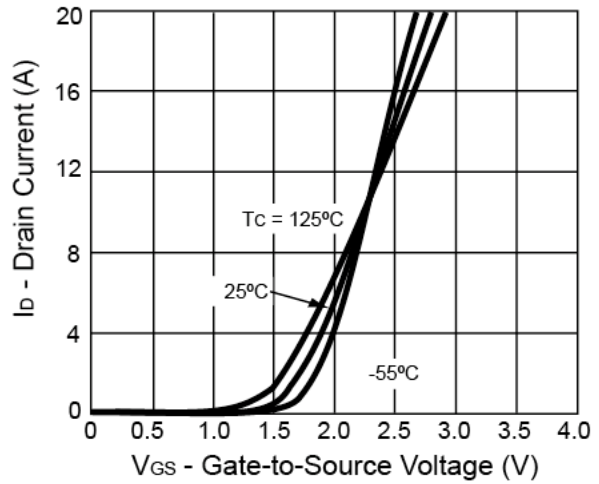
CHARACTERISTICS CURVES

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

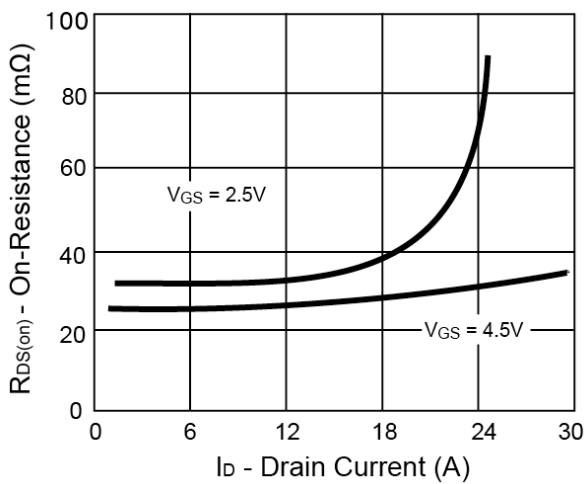
Output Characteristics



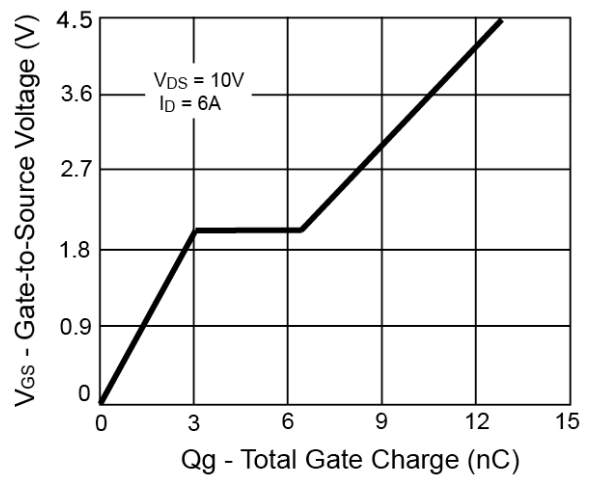
Transfer Characteristics



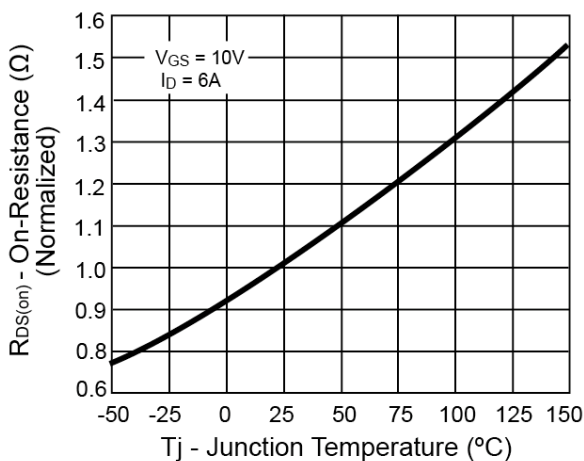
On-Resistance vs. Drain Current



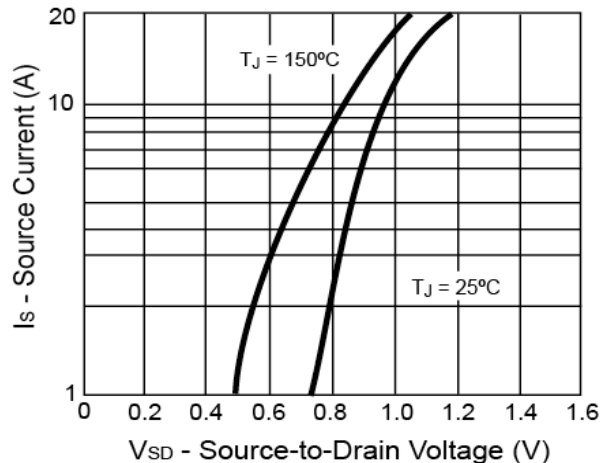
Gate Charge



On-Resistance vs. Junction Temperature



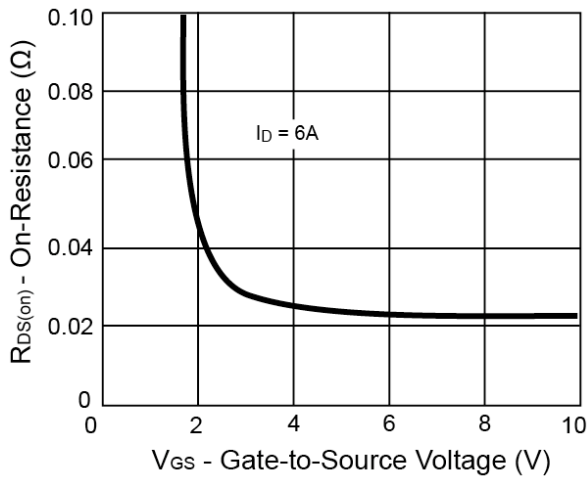
Source-Drain Diode Forward Voltage



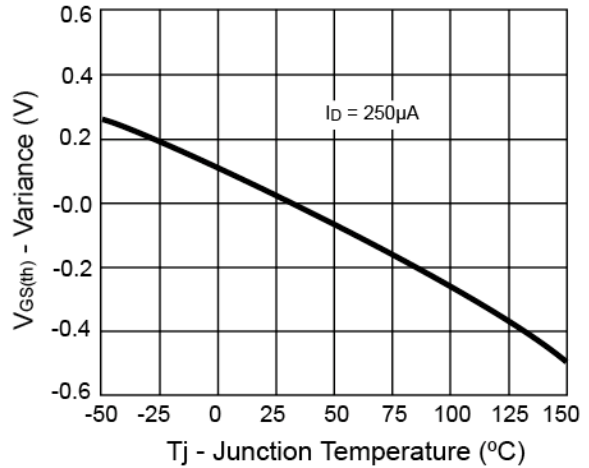
CHARACTERISTICS CURVES

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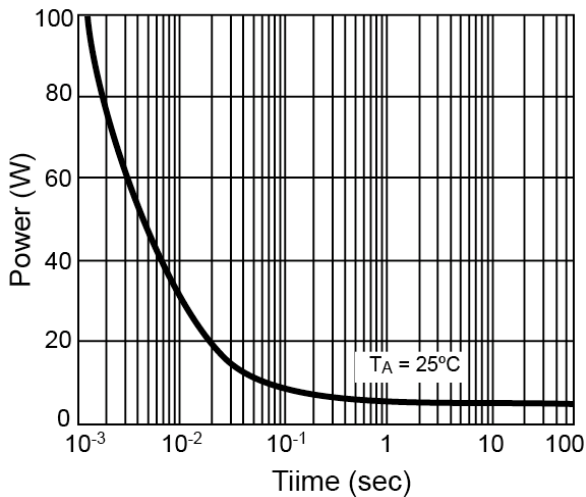
On-Resistance vs. Gate-Source Voltage



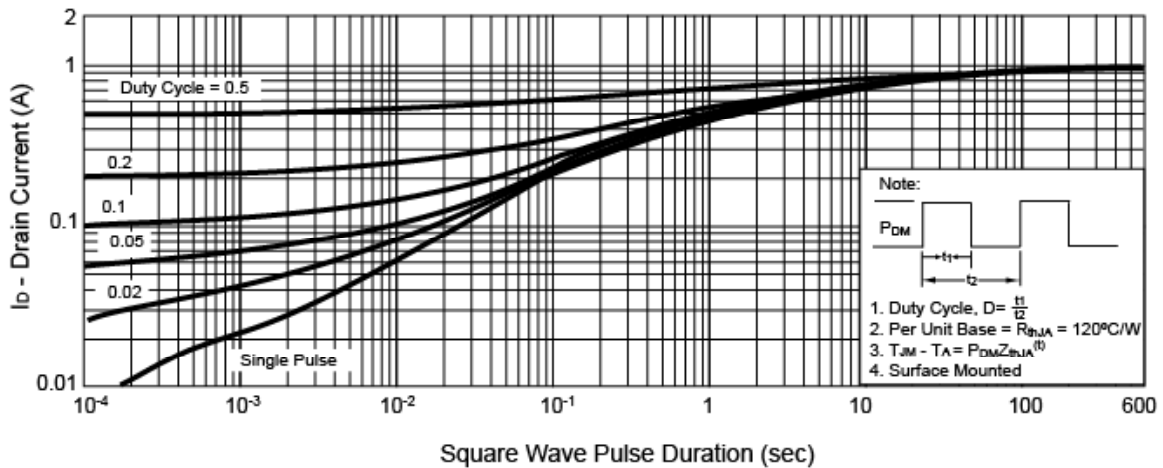
Threshold Voltage



Single Pulse Power

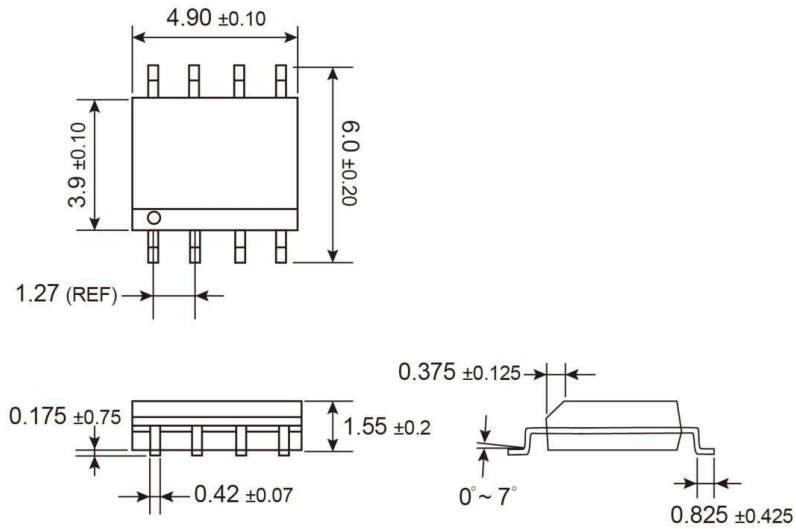


Normalized Thermal Transient Impedance, Junction-to-Ambient

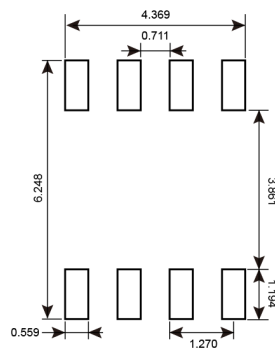


PACKAGE OUTLINE DIMENSIONS (Unit: Millimeters)

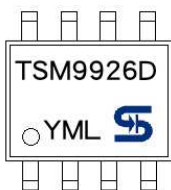
SOP-8



SUGGESTED PAD LAYOUT (Unit: Millimeters)



MARKING DIAGRAM



- Y** = Year Code
- M** = Month Code for Halogen Free Product
 - O** =Jan
 - P** =Feb
 - Q** =Mar
 - R** =Apr
 - S** =May
 - T** =Jun
 - U** =Jul
 - V** =Aug
 - W** =Sep
 - X** =Oct
 - Y** =Nov
 - Z** =Dec
- L** = Lot Code (1~9, A~Z)

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