TSM9966DCX6

20V Dual N-Channel Enhancement Mode MOSFET

SOT-26



Pin assignment:
1. Gate 1
2. Drain
3. Gate 2
4. Source 2
5. Drain
6. Source 1

V_{DS} = 20V
$R_{DS\ (on)}$, Vgs @ 4.5V, Ids @ 5A = 30mΩ
$R_{DS\ (on)}$, Vgs @ 2.5V, Ids @ 4A = 40mΩ

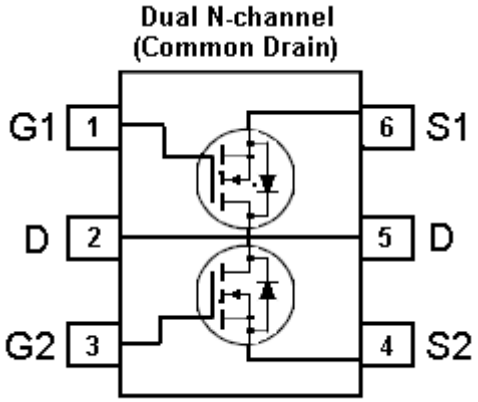
Features

- ✧ Advanced trench process technology
- ✧ High density cell design for ultra low on-resistance
- ✧ Excellent thermal and electrical capabilities
- ✧ Surface mount
- ✧ Fast switching

Ordering Information

Part No.	Packing	Package
TSM9966DCX6	Tape & Reel	SOT-26

Block Diagram



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

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	20V	V
Gate-Source Voltage		V_{GS}	± 12	V
Continuous Drain Current, V_{GS} @4.5V.		I_D	5	A
Pulsed Drain Current, V_{GS} @4.5V		I_{DM}	20	A
Maximum Power Dissipation	Ta = 25 °C	P_D	1.25	W
	Ta > 25 °C		16	mW/ °C
Operating Junction Temperature		T_J	+150	°C
Operating Junction and Storage Temperature Range		T_J, T_{STG}	- 55 to +150	°C

Thermal Performance

Parameter	Symbol	Limit	Unit
Junction to Ambient Thermal Resistance (PCB mounted)	Rθja	100	°C/W

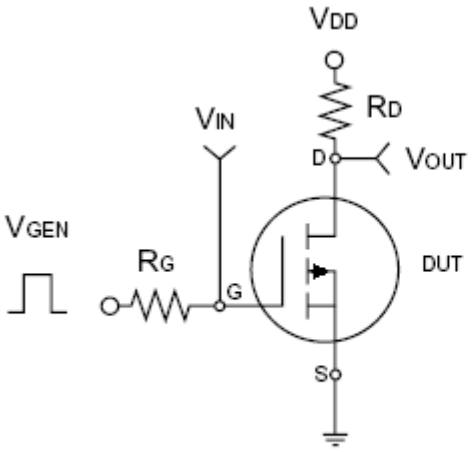
Note: Surface mounted on FR4 board t<=5sec.

Electrical Characteristics (per channel)

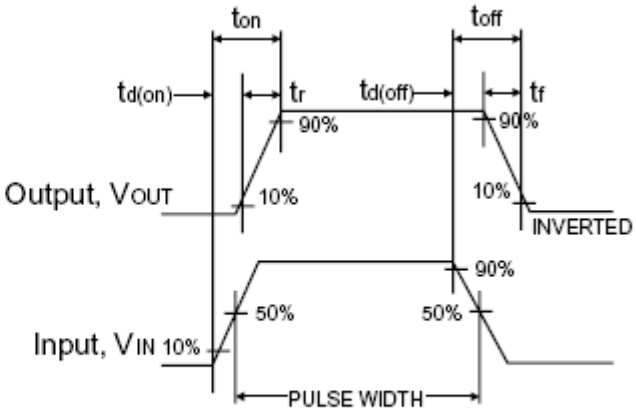
Ta = 25 °C unless otherwise noted

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250uA	BV_{DSS}	20	--	--	V
Drain-Source On-State Resistance	V_{GS} = 4.5V, I_D = 5A	$R_{DS(ON)}$	--	25	30	mΩ
Drain-Source On-State Resistance	V_{GS} = 2.5V, I_D = 4A	$R_{DS(ON)}$	--	30	40	
Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250uA	$V_{GS(TH)}$	0.6	--	--	V
Zero Gate Voltage Drain Current	V_{DS} = 20V, V_{GS} = 0V	I_{DSS}	--	--	1.0	uA
Gate Body Leakage	V_{GS} = ± 12V, V_{DS} = 0V	I_{GSS}	--	--	± 100	nA
Forward Transconductance	V_{DS} = 10V, I_D = 5A	g_{fs}	7	13	--	S
Dynamic						
Total Gate Charge	V_{DS} = 10V, I_D = 5A, V_{GS} = 4.5V	Q_g	--	4.8	--	nC
Gate-Source Charge		Q_{gs}	--	0.9	--	
Gate-Drain Charge		Q_{gd}	--	1.4	--	
Turn-On Delay Time	V_{DD} = 10V, R_L = 10Ω, I_D = 1A, V_{GEN} = 4.5V, R_G = 6Ω	$t_{d(on)}$	--	8.1	15	nS
Turn-On Rise Time		t_r	--	9.9	--	
Turn-Off Delay Time		$t_{d(off)}$	--	21.8	--	
Turn-Off Fall Time		t_f	--	5.3	--	
Input Capacitance	V_{DS} = 10V, V_{GS} = 0V, f = 1.0MHz	C_{iss}	--	562	--	pF
Output Capacitance		C_{oss}	--	106	--	
Reverse Transfer Capacitance		C_{rss}	--	75	--	
Source-Drain Diode						
Max. Diode Forward Current		I_S	--	--	1.7	A
Diode Forward Voltage	I_S = 1.7A, V_{GS} = 0V	V_{SD}	--	0.75	1.2	V

Note : pulse test: pulse width <=300uS, duty cycle <=2%

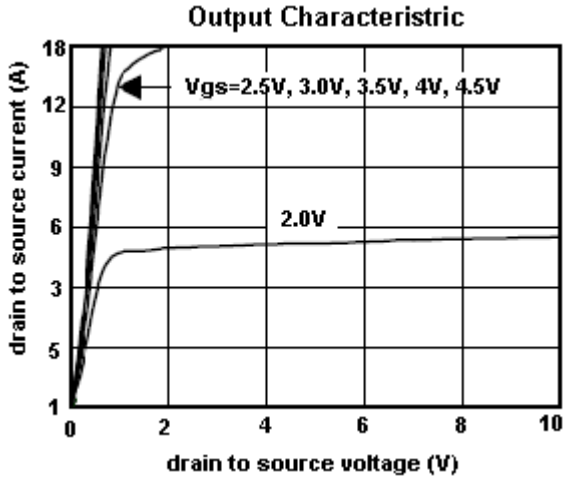


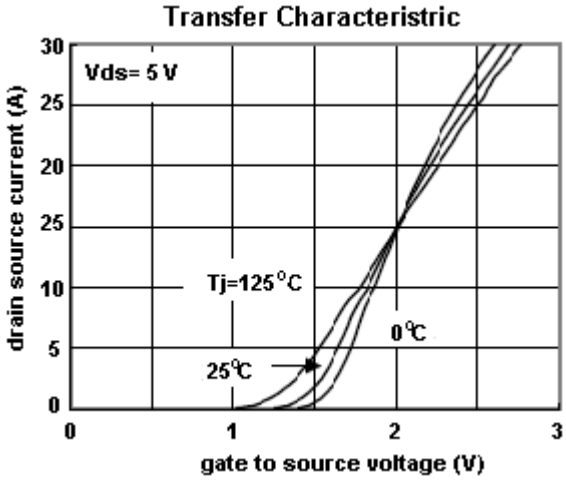
Switching Test Circuit

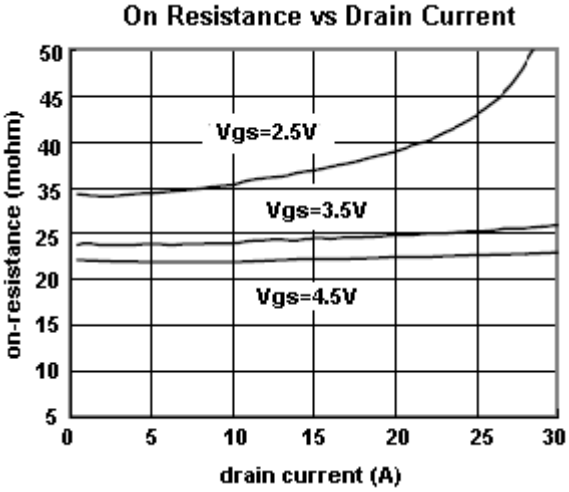


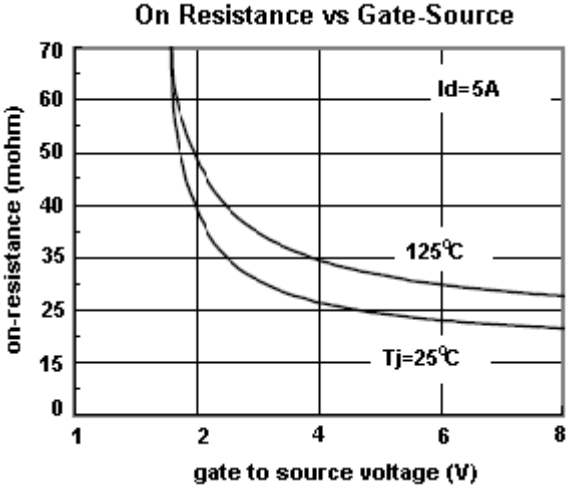
Switchin Waveforms

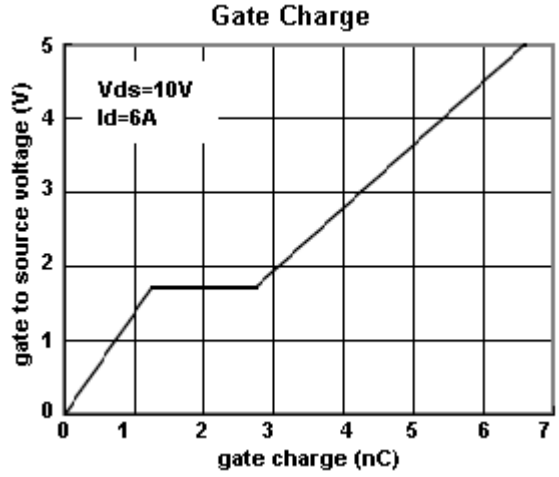
Typical Characteristics Curve (Ta = 25 °C unless otherwise noted)

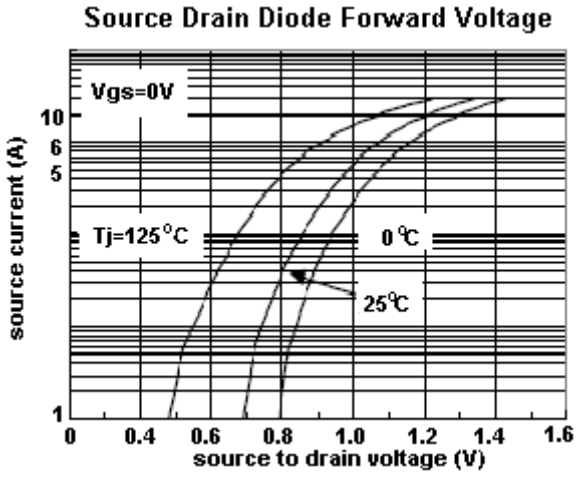




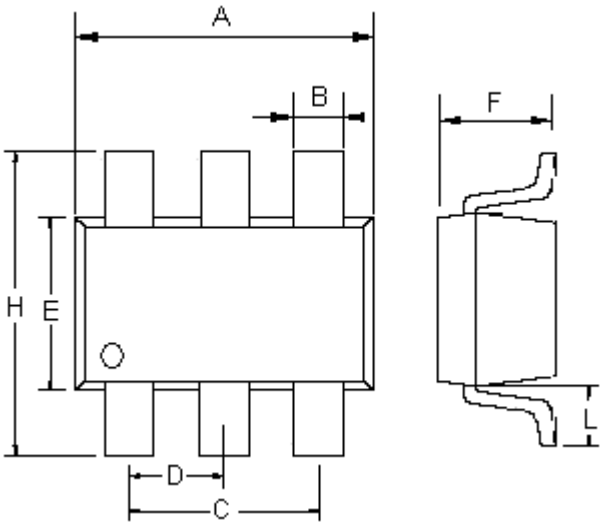








SOT-26 Mechanical Drawing



SOT-26 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.70	3.00	0.106	0.118
B	0.25	0.50	0.010	0.020
C	1.90(typ)		0.075(typ)	
D	0.95(typ)		0.037(typ)	
E	1.50	1.70	0.059	0.067
F	1.05	1.35	0.041	0.053
H	2.60	3.00	0.102	0.118
L	0.60(typ)		0.024(typ)	