

TSSOP-8



Pin Definition:

- | | |
|-------------|-------------|
| 1. Drain 1 | 8. Drain 2 |
| 2. Source 1 | 7. Source 2 |
| 3. Source 1 | 6. Source 2 |
| 4. Gate 1 | 5. Gate 2 |

PRODUCT SUMMARY

V_{DS} (V)	$R_{DS(on)}$ (m Ω)	I_D (A)
20	30 @ $V_{GS} = 4.5V$	6.0
	40 @ $V_{GS} = 2.5V$	5.2

Features

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

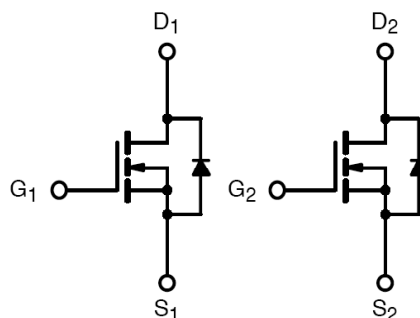
Application

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

Ordering Information

Part No.	Package	Packing
TSM6866SDCA RV	TSSOP-8	3Kpcs / 13" Reel

Block Diagram



Dual N-Channel MOSFET

Absolute Maximum Rating ($T_a = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	6	A
Pulsed Drain Current	I_{DM}	30	A
Continuous Source Current (Diode Conduction) ^{a,b}	I_S	1.7	A
Maximum Power Dissipation	P_D	$T_a = 25^\circ C$ 1.6	W
		$T_a = 75^\circ C$ 1.1	
Operating Junction Temperature	T_J	+150	$^\circ C$
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	$R_{\theta JC}$	30	$^\circ C/W$
Junction to Ambient Thermal Resistance (PCB mounted)	$R_{\theta JA}$	62.5	$^\circ C/W$

Notes:

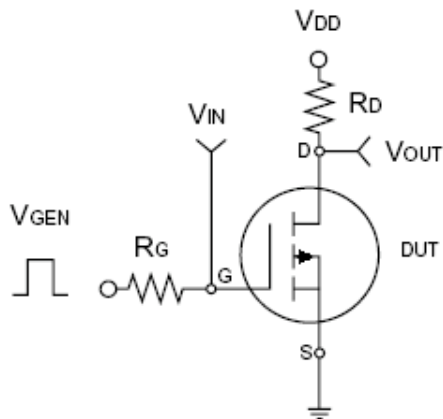
- a. Pulse width limited by the Maximum junction temperature
b. Surface Mounted on FR4 Board, $t \leq 5$ sec.

Electrical Specifications (Ta = 25°C unless otherwise noted)

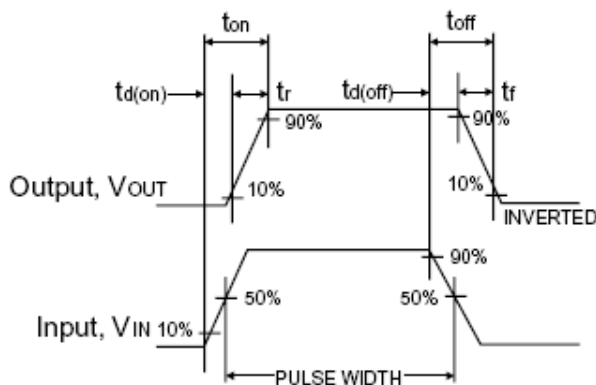
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250uA	BV _{DSS}	20	--	--	V
Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250uA	V _{GS(TH)}	0.6	--	--	V
Gate Body Leakage	V _{GS} = ±12V, V _{DS} = 0V	I _{GSS}	--	--	±100	nA
Zero Gate Voltage 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	--	--	A
Drain-Source On-State Resistance	V _{GS} = 4.5V, I _D = 6.0A	R _{DS(ON)}	--	21	30	mΩ
	V _{GS} = 2.5V, I _D = 5.2A		--	30	40	
Forward Transconductance	V _{DS} = 10V, I _D = 6A	g _{fs}	--	30	--	S
Diode Forward Voltage	I _S = 1.7A, V _{GS} = 0V	V _{SD}	--	0.7	1.2	V
Dynamic ^b						
Total Gate Charge	V _{DS} = 10V, I _D = 6A, V _{GS} = 4.5V	Q _g	--	5	7	nC
Gate-Source Charge		Q _{gs}	--	1	--	
Gate-Drain Charge		Q _{gd}	--	1.5	--	
Input Capacitance	V _{DS} = 8V, V _{GS} = 0V, f = 1.0MHz	C _{iss}	--	565	--	pF
Output Capacitance		C _{oss}	--	105	--	
Reverse Transfer Capacitance		C _{rss}	--	75	--	
Switching ^c						
Turn-On Delay Time	V _{DD} = 10V, R _L = 10Ω, I _D = 1A, V _{GEN} = 4.5V, R _G = 6Ω	t _{d(on)}	--	8	20	nS
Turn-On Rise Time		t _r	--	10	20	
Turn-Off Delay Time		t _{d(off)}	--	22	45	
Turn-Off Fall Time		t _f	--	6	15	

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.



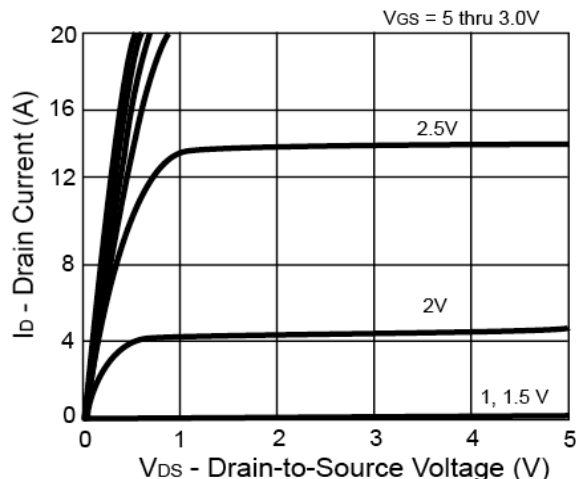
Switching Test Circuit



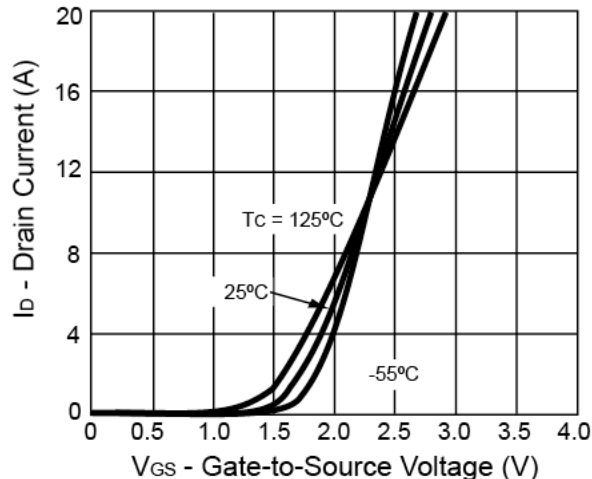
Switchin Waveforms

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

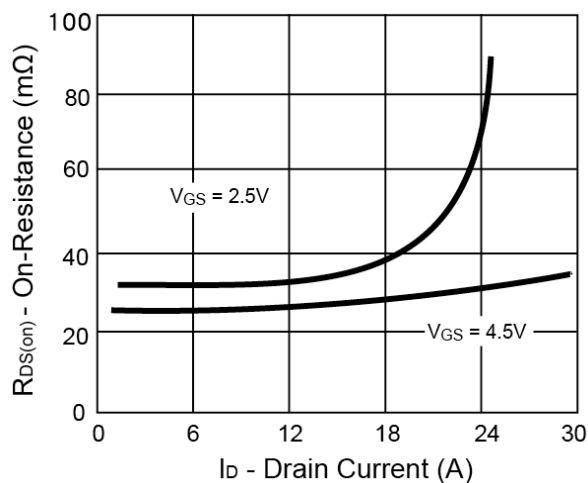
Output Characteristics



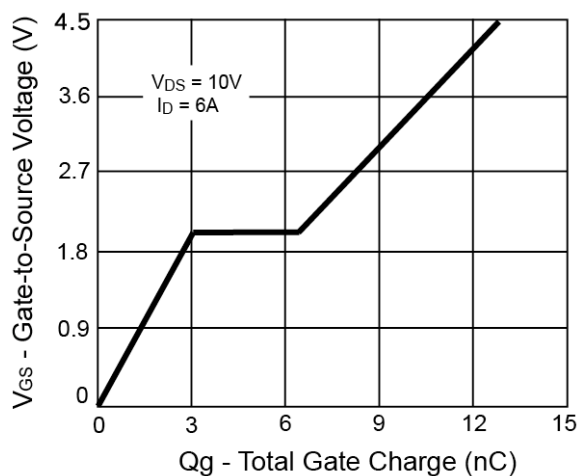
Transfer Characteristics



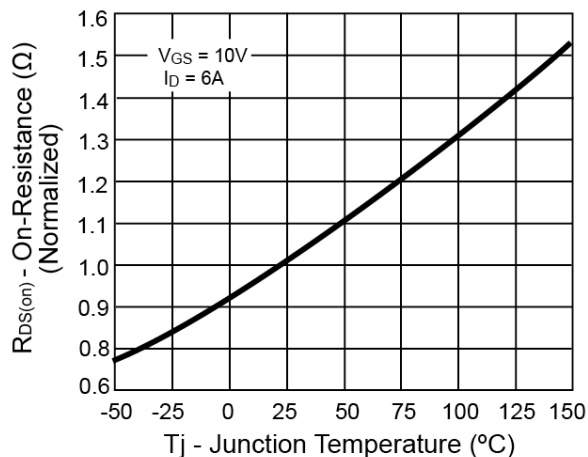
On-Resistance vs. Drain Current



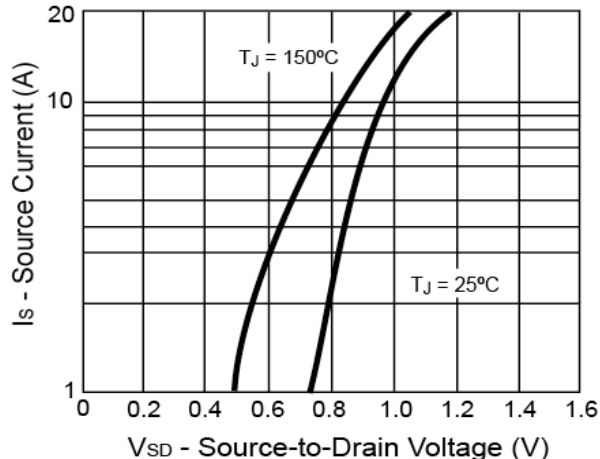
Gate Charge



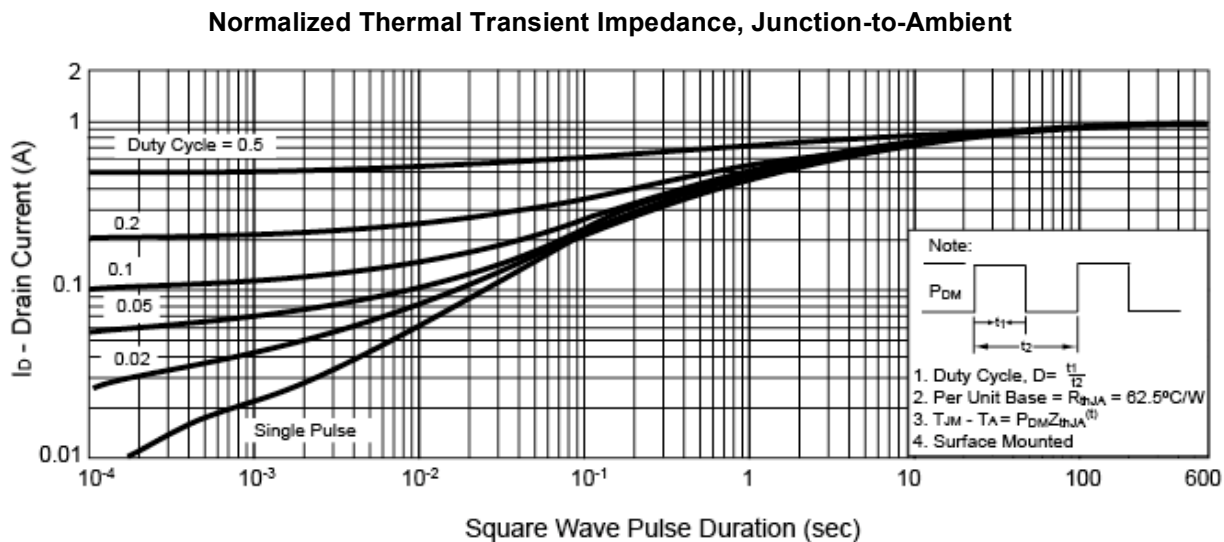
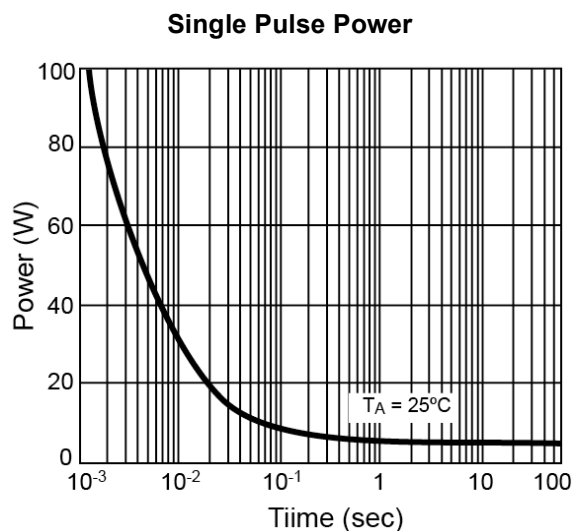
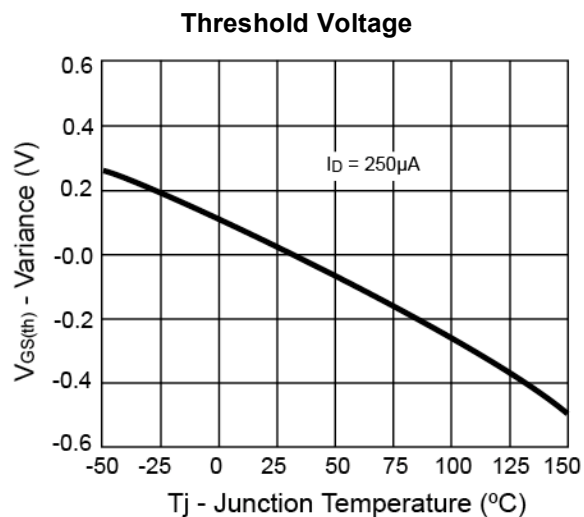
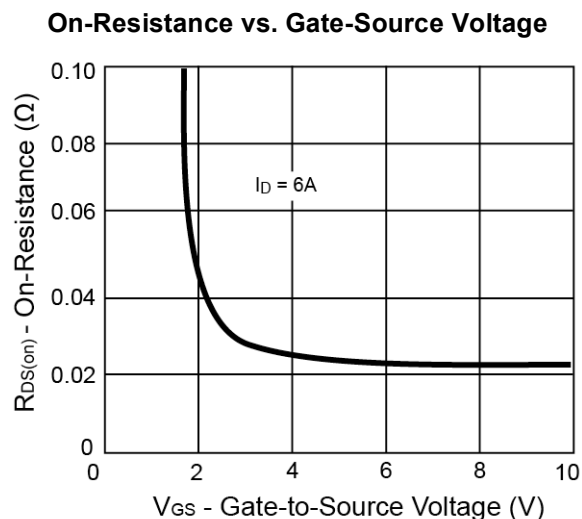
On-Resistance vs. Junction Temperature



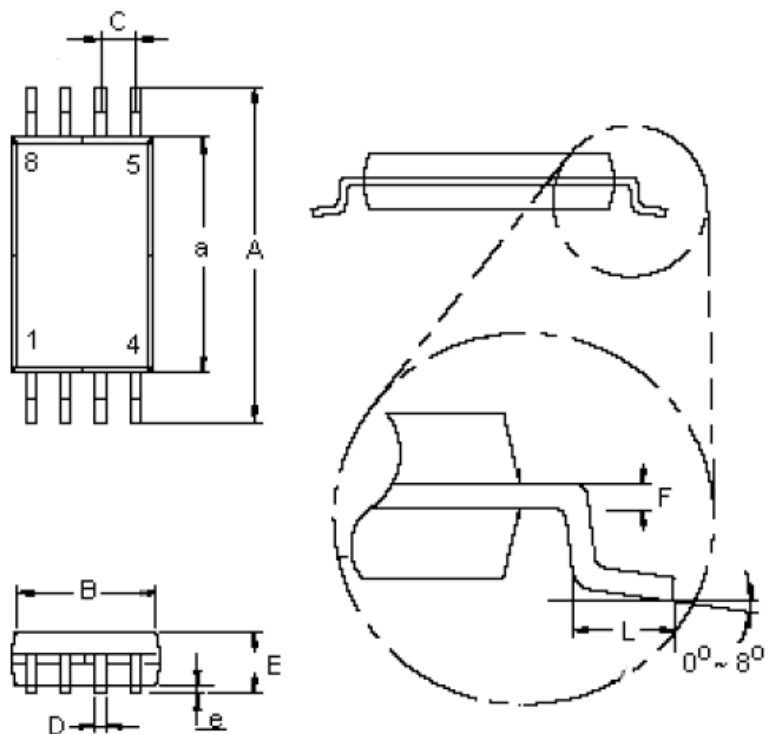
Source-Drain Diode Forward Voltage



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

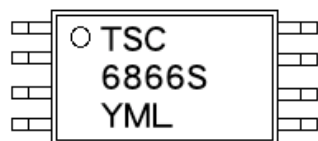


TSSOP-8 Mechanical Drawing



TSSOP-8 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	6.20	6.60	0.244	0.260
a	4.30	4.50	0.170	0.177
B	2.90	3.10	0.114	0.122
C	0.65 (typ)		0.025 (typ)	
D	0.25	0.30	0.010	0.019
E	1.05	1.20	0.041	0.049
e	0.05	0.15	0.002	0.009
F	0.127		0.005	
L	0.50	0.70	0.020	0.028

Marking Diagram



Y = Year Code

M = Month Code

(**A**=Jan, **B**=Feb, **C**=Mar, **D**=Apr, **E**=May, **F**=Jun, **G**=Jul, **H**=Aug,
I=Sep, **J**=Oct, **K**=Nov, **L**=Dec)

L = Lot Code

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