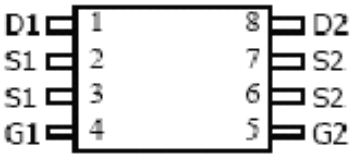
20V N-Channel Enhancement-Mode MOSFET

RDS(ON), Vgs@1.8V, Ids@2.0A = 75mΩ
RDS(ON), Vgs@2.5V, Ids@3.5A = 38mΩ
RDS(ON), Vgs@4.0V, Ids@4.5A = 30mΩ
RDS(ON), Vgs@4.5V, Ids@4.5A = 28mΩ
RDS(ON), Vgs@10V, Ids@5.0A = 25mΩ

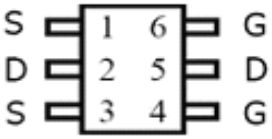
Features

- Advanced trench process technology
- High Density Cell Design For Ultra Low On-Resistance
- High Power and Current handing capability
- Ideal for Li ion battery pack applications

TSSOP-08

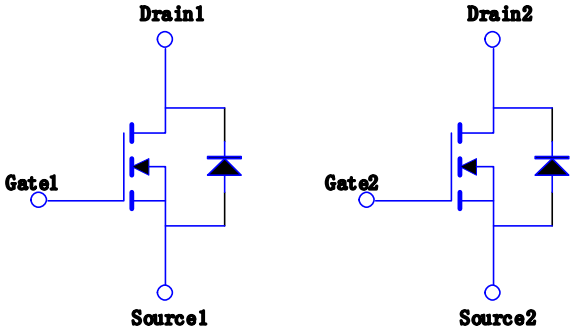


SOT-23-6



Top View

Internal Schematic Diagram



N-Channel MOSFET

Maximum Ratings and Thermal Characteristics (T_A = 25oC unless otherwise noted)

Parameter		Symbol	Limit	Umit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±12	
Continuous Drain Current[1]		I_D	6	A
Pulsed Drain Current[2]		I_{DM}	20	
Maximum Power Dissipation	TA = 25℃	P_D	2	W
	TA = 75℃		1.28	
Operating Junction and Storage Temperature Range		T_{j1} T_{stg}	-55 to 150	℃
Junction-to-Ambient Thermal Resistance (PCB mounted)[3]		R_{OUA}	62.5	℃/W

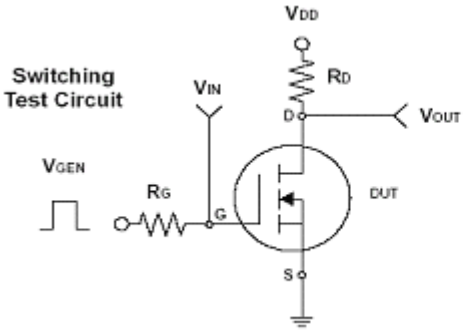
Note: 1. Fused current that based on wire numbers and diameter
2. Repetitive Rating: Pulse width limited by the maximum junction temperature
3. 1-in^2 2oz Cu PCB board

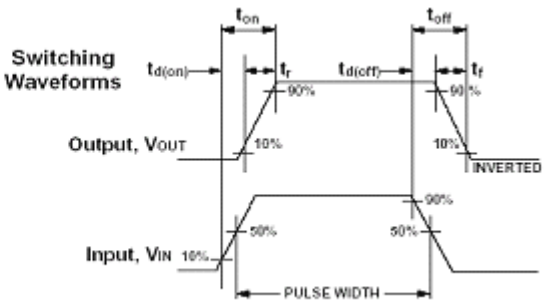
ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V,I_D = 250uA	20			V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS} = 1.8V,I_D = 2.0A		53.0	75.0	mΩ
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS} = 2.5V,I_D = 3.5A		30.0	38.0	
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS} = 4.0V,I_D = 4.5A		23.0	30.0	
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS} = 4.5V,I_D = 4.5A		22.0	28.0	
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS} = 10V,I_D = 5.0A		20.0	25.0	
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS} = VGS,I_D = 250uA	0.5	0.75	1	V
Zero Gate Voltage drain Current	I_{DSS}	V_{GS} = 20V,V_{GS} = 0V			1	uA
Gate Body Leakage	I_{GSS}	V_{GS} = ±12V,V_{DS} = 0V			±100	nA
Dynamic[3]						
Total Gate Charge	Q_G	V_{DS} = 10V,I_D = 6A V_{GS} = 4.5V		6.24	8.11	nC
Gate-Source Charge	Q_{GS}			1.64	2.13	
Gate-Drain Charge	Q_{GB}			1.34	1.74	
Tum-On Delay Time	$T_{d(on)}$	V_{DD} = 10V,I_D = 6A I_D = 1A,V_{GS} = 4.5V		10.4	20.8	ns
Tum-On Rise Time	T_r			4.4	8.8	
Tum-Off Delay Time	$T_{d(off)}$			27.36	54.72	
Tum-Off Fall Time	T_f			4.16	8.32	
Input Capacitance	C_{iss}	V_{DS} = 8V,V_{GS} = 0V f =1.0MHz		522.3		pF
Output Capacitance	C_{oss}			98.48		
Reverse Transfer Capacitance	C_{rss}			74.69		
Source-Drain Diode						
Max.Diode Forward Current	Is				1.7	A
Diode Forward Voltage	V_{SD}	I_S = 1.7A,V_{GS} = 0V		0.74		V

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

3. Guaranteed by design; not subject to production testing





Typical Characteristics Curves (Ta=25°C, unless otherwise note)

Fig.1 Output Characteristic

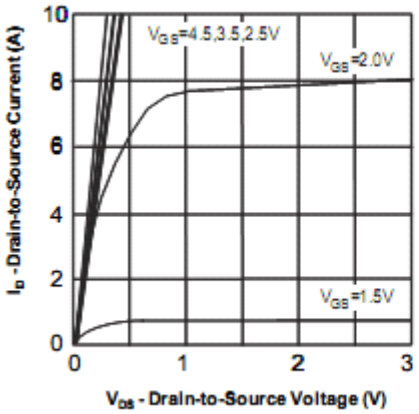


Fig.2 Transfer Characteristics

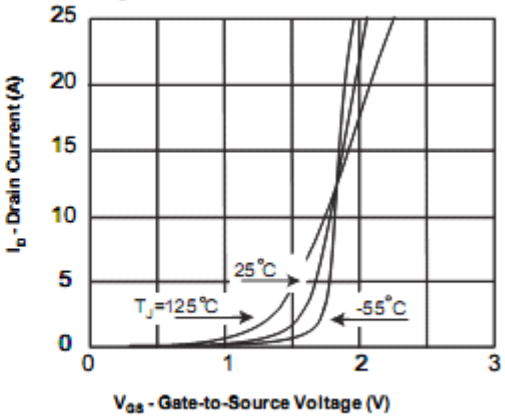


Fig.3 On-Resistance Variation with Temperature

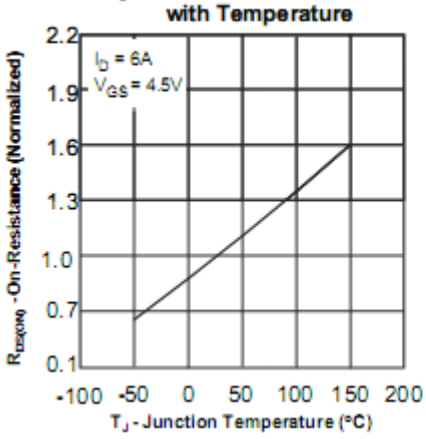


Fig.4 Body Diode Forward Voltage Variation with Source Current

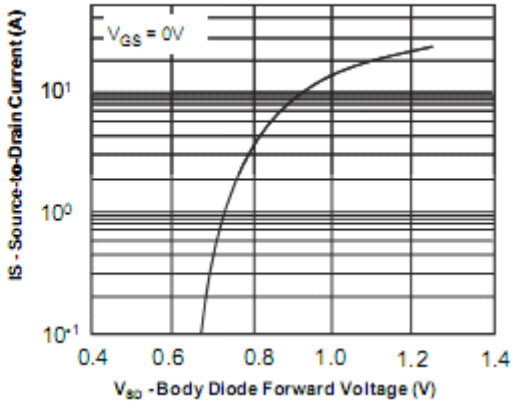


Fig.5 Gate Threshold Variation with Temperature

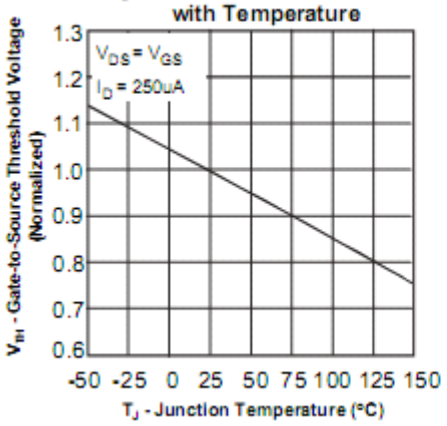


Fig.6 Capacitance

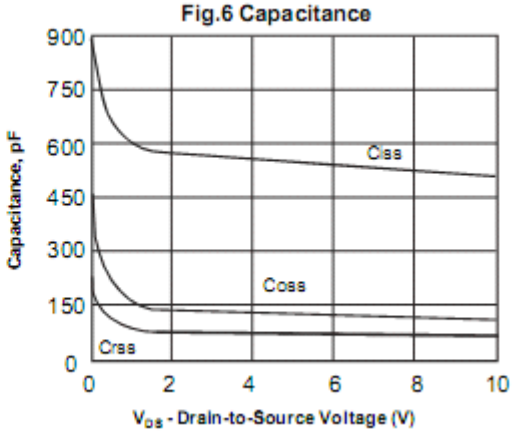


Fig. 7 Gate Charge Waveform

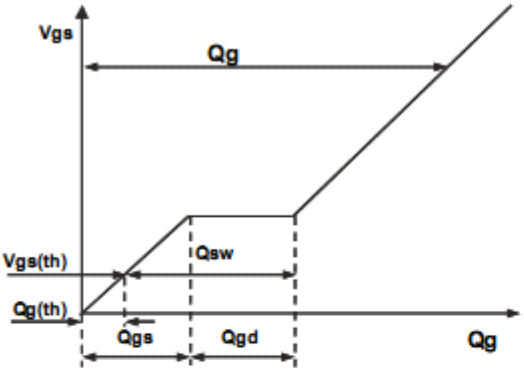


Fig. 8 Gate Charge

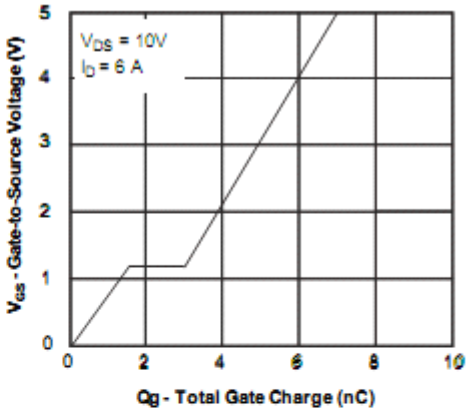


Fig. 9 Maximum Safe Operating Area

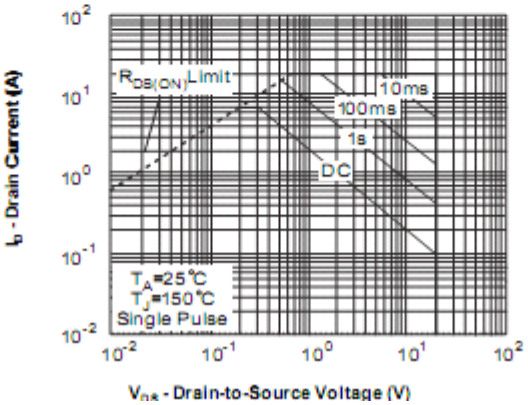


Fig. 10 Normalized Thermal Transient Impedance Curve