20V, 10.2mΩ, 10A, N-Channel MOSFET

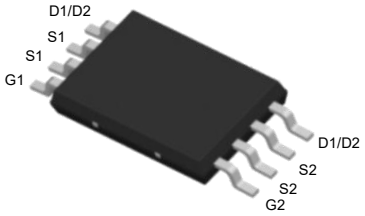
1.Features

- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

V_{DS} Typ.	$R_{DS(on)}$ Typ.	I_D Max.
20V	10.2mΩ @ 4.5V	10A
	12.6mΩ @ 2.5V	

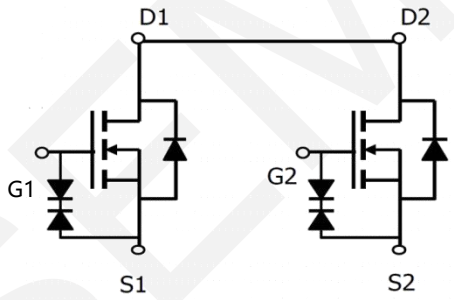
2.Applications

- Battery Protection
- Battery Powered Systems
- Power Management in Notebook Computer
- Portable Equipment



Pin Description

TSSOP8



Schematic Diagram

3.Absolute Max Ratings at Ta=25℃ (Note1)

Parameter	Symbol	Maximum	Units
Drain to Source Voltage	V_{DSS}	20	V
Gate to Source Voltage	V_{GSS}	±12	V
Drain Current-Continuous	I_D	10	A
Drain Current (Pulse)	I_{DM}	30	A
Maximum Power Dissipation	P_D	1.5	W
Operating Junction and Storage Temperature Range	T_j, T_{stg}	-55 to +150	℃

Note 1: Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

4.Thermal Resistance Ratings (Note 2)

Parameter	Symbol	Value	Unit
Maximum Junction-to-Ambien	$R_{\theta JA}$	64	℃/W

Note 2： When mounted on 1 inch square copper board t ≤ 10sec The value in any given application depends on the user's specific board design.

5.Electrical Characteristics at Ta=25℃ (Note 3)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 250μA, V_{GS} = 0V	20	22.5		V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS} = 16V, V_{GS} = 0V			1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS} = ±10V, V_{DS} = 0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=250μA	0.5	0.8	1.1	V
Drain to Source On-State Resistance	$R_{DS(on)}$	I_D = 6A, V_{GS} = 4.5V		10.2	11.6	mΩ
		I_D = 5A, V_{GS} = 2.5V		12.6	16	mΩ
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=10V, Frequency=1.0MHz		290		pF
Output Capacitance	C_{oss}			120		pF
Reverse Transfer Capacitance	C_{rss}			40		pF
Turn-ON Delay Time	$t_{d(on)}$	V_{DS} = 10V,V_{GS} = 5V, R_{GEN} = 3Ω,R_L = 1.7Ω		280		ns
Turn-ON Rise Time	t_r			972		ns
Turn-OFF Delay Time	$t_{d(off)}$			2.4		ns
Turn-ON Fall Time	t_f			2.2		ns
Total Gate Charge	Q_g	V_{DS} = 10V, V_{GS} = 4.5V, I_D = 6A		5.2		nC
Gate-Source Charge	Q_{gs}			2		nC
Gate-Drain Charge	Q_{gd}			1.9		nC
Diode Forward Voltage	V_{SD}	I_S = 1A, V_{GS} = 0V		0.75	1	V

Note 3： Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

6.Typical electrical and thermal characteristics

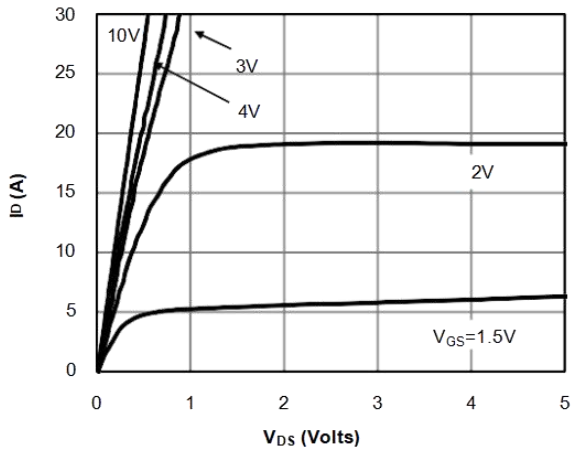


Figure 1 On-Region Characteristics

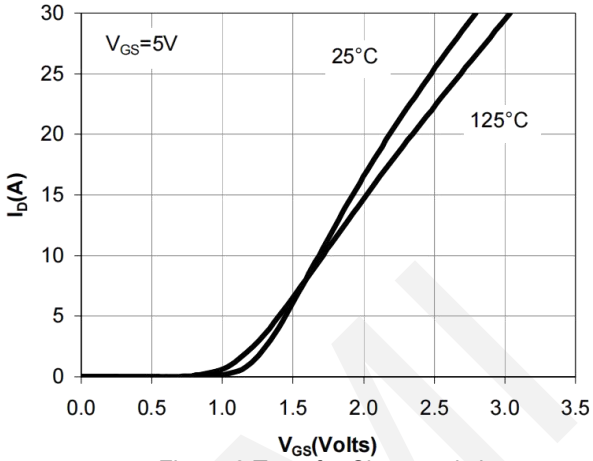


Figure 2 Transfer Characteristics

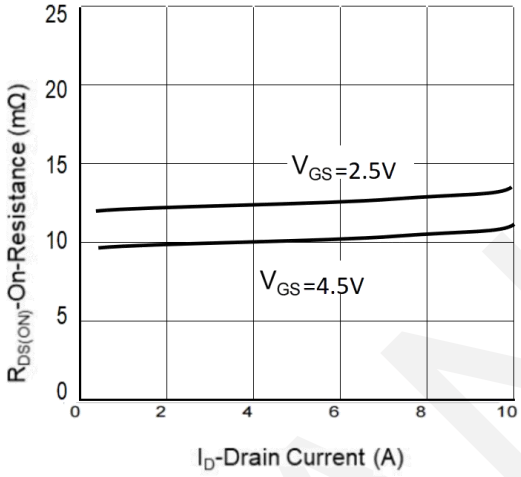


Figure 3 On-Resistance vs. Drain Current and Gate Voltage

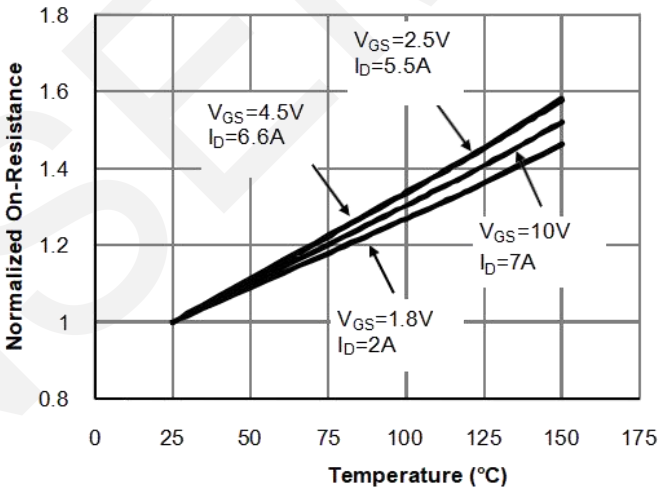


Figure 4 On-Resistance vs. Junction Temperature

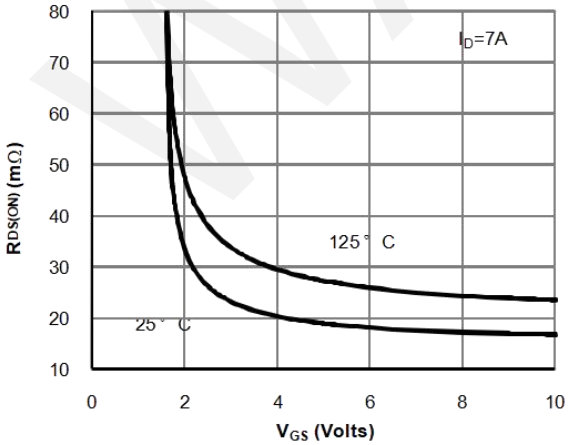


Figure 5 On-Resistance vs. Gate-Source Voltage

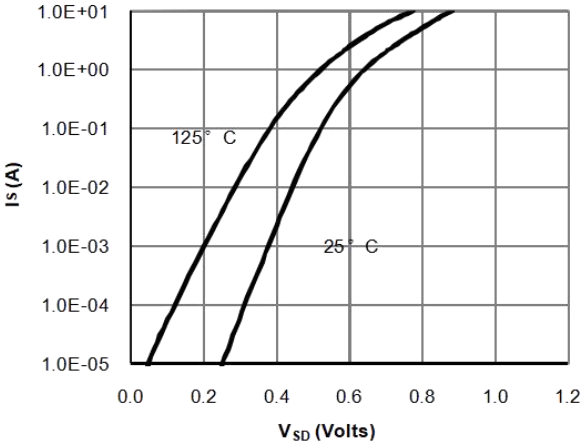


Figure 6 Body-Diode Characteristics

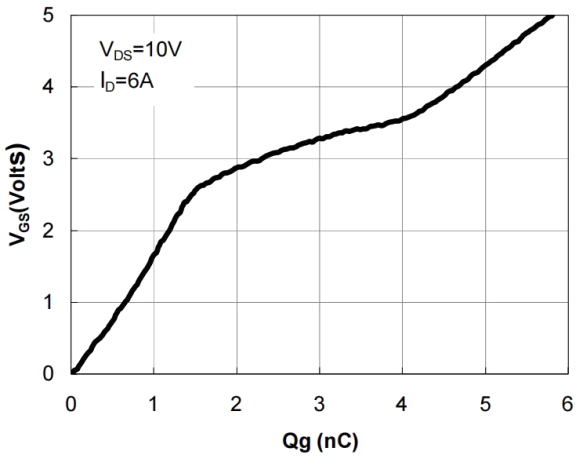


Figure 7 Gate-Charge Characteristics

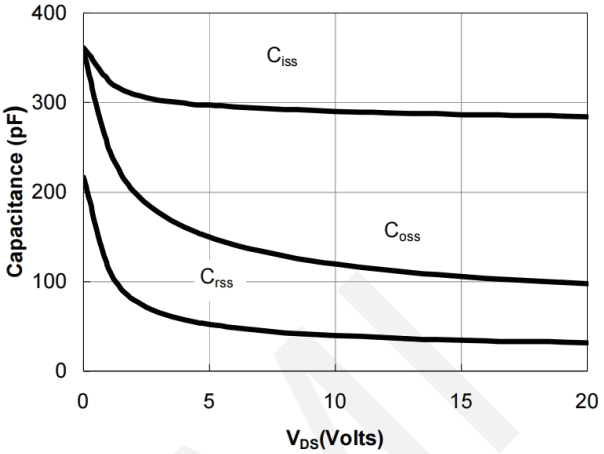


Figure 8 Capacitance Characteristics

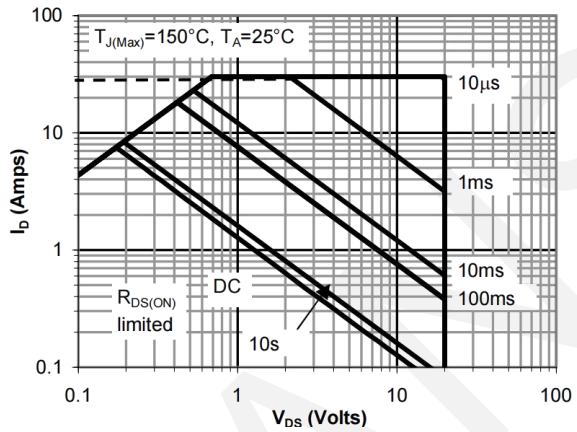


Figure 9 Safe Operating Area

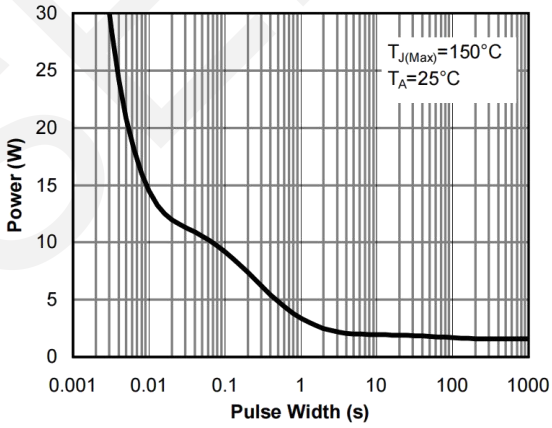


Figure 10 Single Pulse Power Rating Junction-to- Ambient

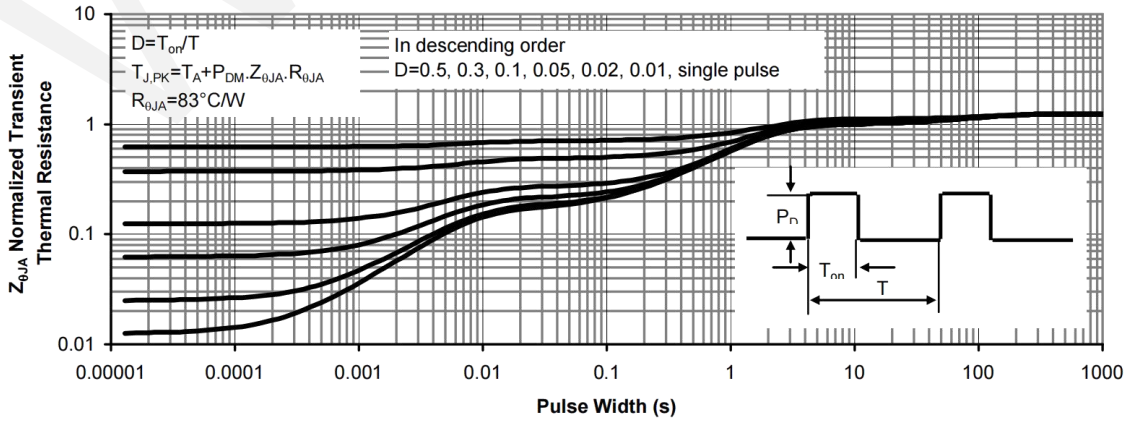
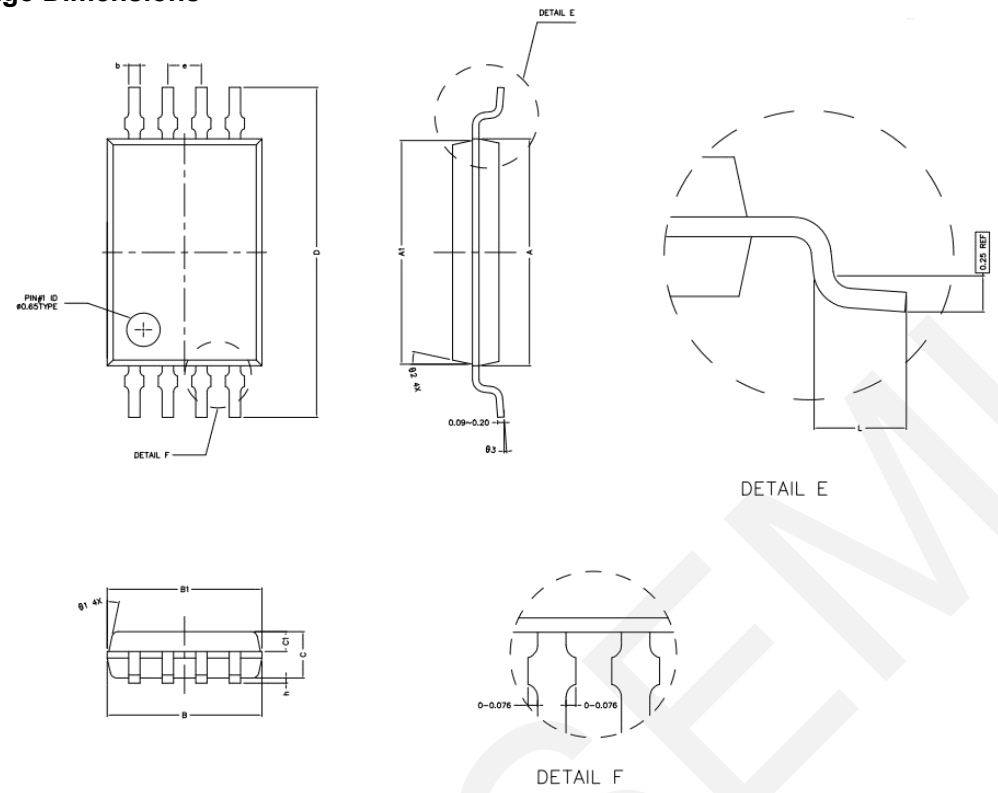


Figure 11 Maximum Transient Thermal Impedence

7.Package Dimensions



COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A	4.300	4.400	4.500
A1	4.240	4.340	4.440
B	2.900	3.000	3.100
B1	2.840	2.940	3.040
C	0.850	0.900	0.950
C1	0.337	0.387	0.437
D	6.250	6.400	6.550
L	0.450	0.600	0.750
b	0.170	0.220	0.300
h	0.050	0.100	0.150
e	0.650TYPE		
θ_1	12° TYPE		
θ_2	12° TYPE		
θ_3	0° ~ 7°		

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