

Dual N-Channel 20V(D-S) MOSFET

Product summary		
V_{DS}	20	V
$R_{DS(ON)}$ (at $V_{GS}=4.5V$) Typ.	16.5	m Ω
$R_{DS(ON)}$ (at $V_{GS}=2.5V$) Typ.	20	m Ω
$R_{DS(ON)}$ (at $V_{GS}=1.8V$) Typ.	24	m Ω
I_D ($T_C=25^\circ C$)	7	A

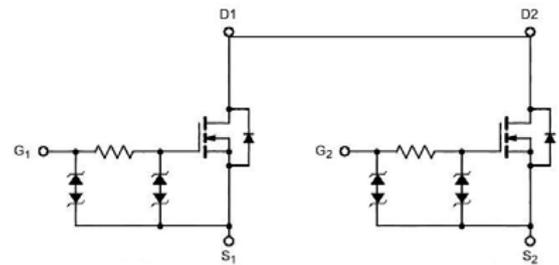
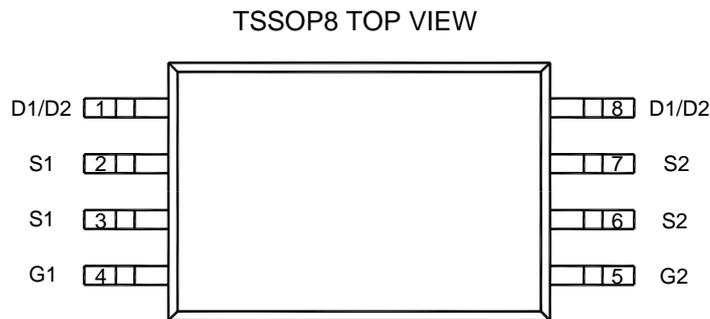
Features

- High density cell trench design for low $R_{ds(on)}$
- Surface mount package
- RoHS and Halogen-Free compliant
- ESD Rating: 2000V HBM

Applications

- Li-ion battery management applications

Pin Configuration



Packing Information

Device	Marking	Reel Size	Tape Width	Quantity
ECG8810	85B .XXX	13'	12mm	3000pcs

Absolute Maximum Ratings (at $T_A=25^\circ C$ Unless Otherwise Noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 12	V
I_D	Continuous Drain Current at $V_{GS}=10V$	$T_C=25^\circ C$	7
		$T_C=100^\circ C$	5.7
I_{DM}	Pulse Drain Current Tested	30	A
P_D	Power Dissipation	$T_C=25^\circ C$	1.8
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to 150	$^\circ C$

Thermal Characteristics

Symbol	Parameter	Typical	Units
$R_{\theta JA}$	Thermal Resistance-Junction to ambient	65	$^\circ C/W$

Electrical Characteristics (at $T_J = 25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
Static Parameters						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	20	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=16V, V_{GS}=0V$	--	--	1	μA
I_{GSS}	Gate-Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 12V$	--	--	± 10	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.7	1.0	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	$V_{GS}=4.5V, I_D=7A$	--	16.5	20	$m\Omega$
		$V_{GS}=2.5V, I_D=5.5A$	--	20	24	$m\Omega$
		$V_{GS}=1.8V, I_D=5A$	--	24	32	$m\Omega$
V_{SD}	Forward Voltage	$I_{SD}=1A, V_{GS}=0V$	--	0.76	1.0	V
Dynamic Parameters						
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=10V$ $f=1MHz$	--	1160	--	pF
C_{oss}	Output Capacitance		--	187	--	pF
C_{rss}	Reverse Transfer Capacitance		--	146	--	pF
Q_g	Total Gate Charge	$V_{DS}=10V, I_D=7A$ $V_{GS}=4.5V$	--	16	--	nC
Q_{gs}	Gate-Source Charge		--	0.8	--	nC
Q_{gd}	Gate-Drain Charge		--	3.8	--	nC
Switching Parameters						
$t_{D(on)}$	Turn-on Delay Time	$V_{DS}=10V, I_D=1A$ $R_G=3\Omega, V_{GS}=4.5V$	--	6.2	--	nS
t_r	Turn-on Rise Time		--	12.7	--	nS
$t_{D(off)}$	Turn-off Delay Time		--	51.7	--	nS
t_f	Turn-off Fall Time		--	16	--	nS
t_{rr}	Reverse Recovery Time	$I_F=7A$ $di/dt=100A/\mu s$	--	17.7	--	nS
Q_{rr}	Reverse Recovery Charge		--	6.7	--	nC

Typical Characteristics

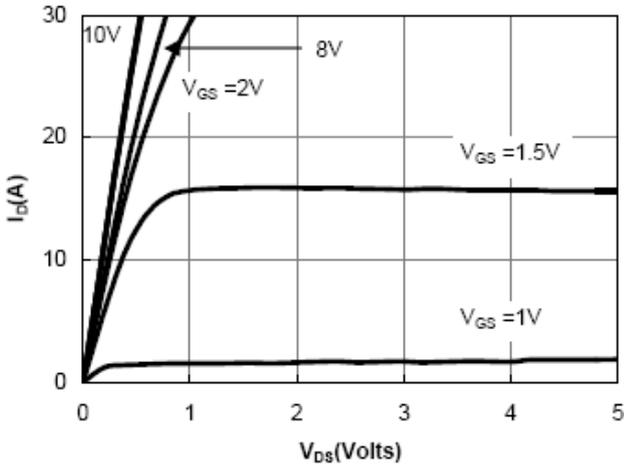


Figure 1: On-Regions Characteristics

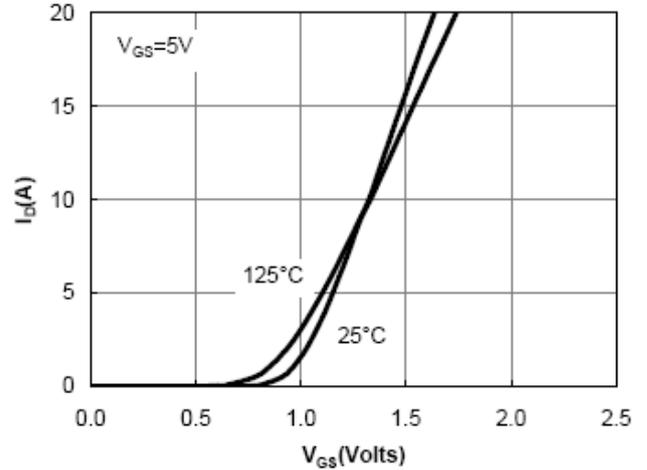


Figure 2: Transfer Characteristics

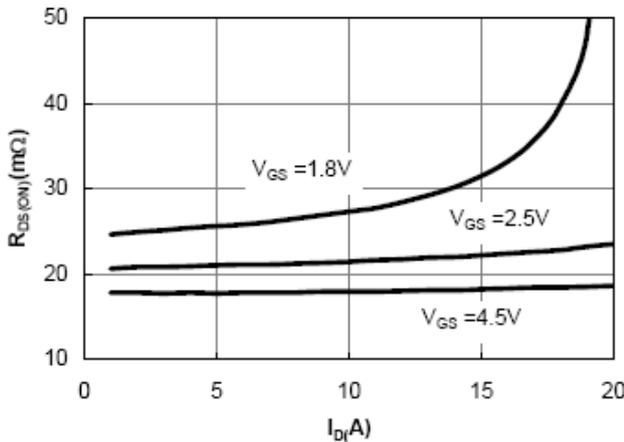


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

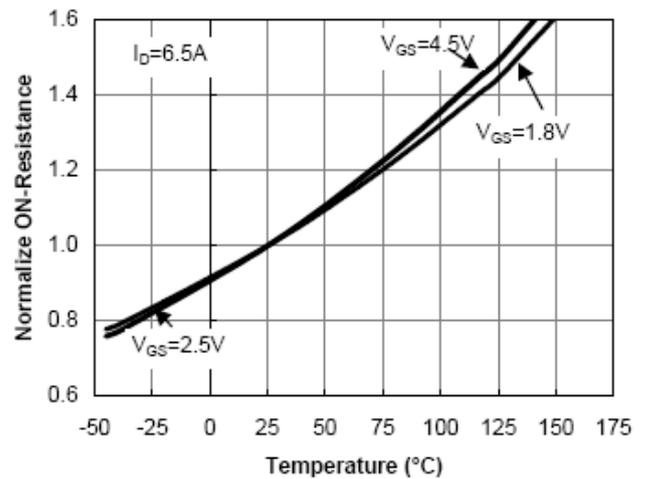


Figure 4: On-Resistance vs. Junction Temperature

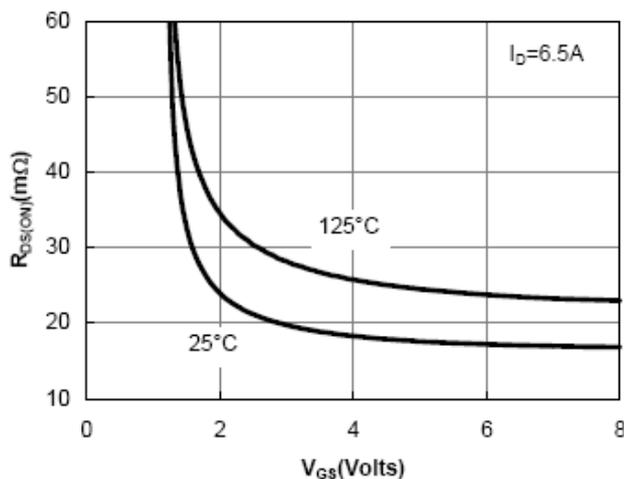


Figure 5: On-Resistance vs. Gate-Source Voltage

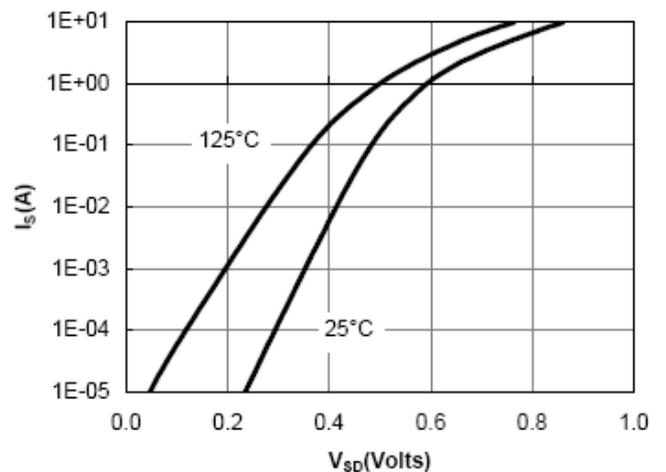


Figure 6: Body-Diode Characteristics

Typical Characteristics

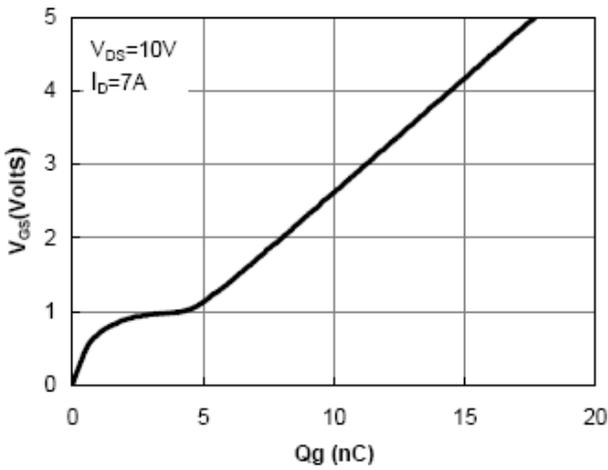


Figure 7: Gate-Charge Characteristics

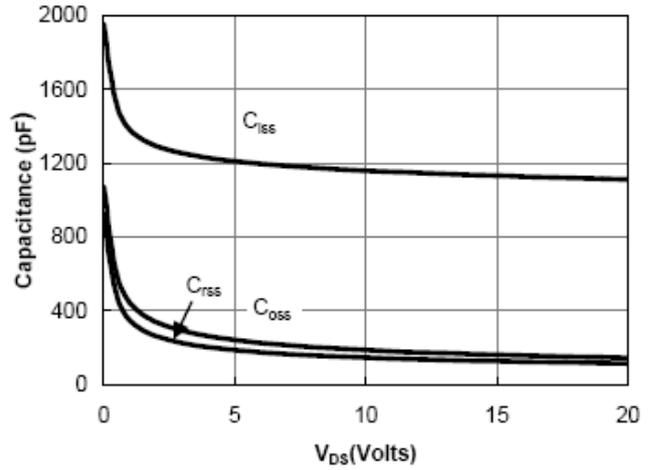


Figure 8: Capacitance Characteristics

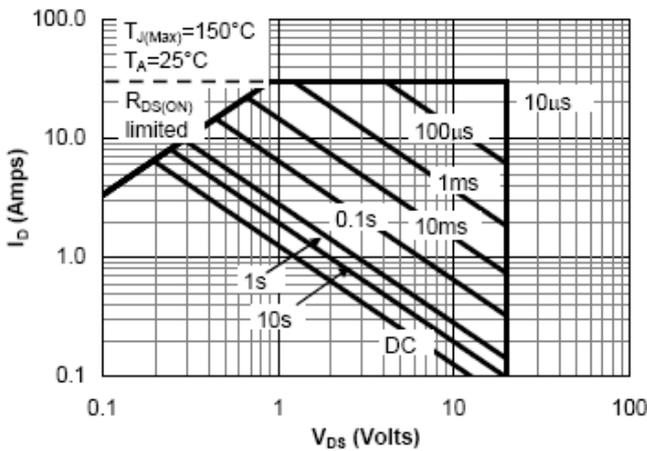


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

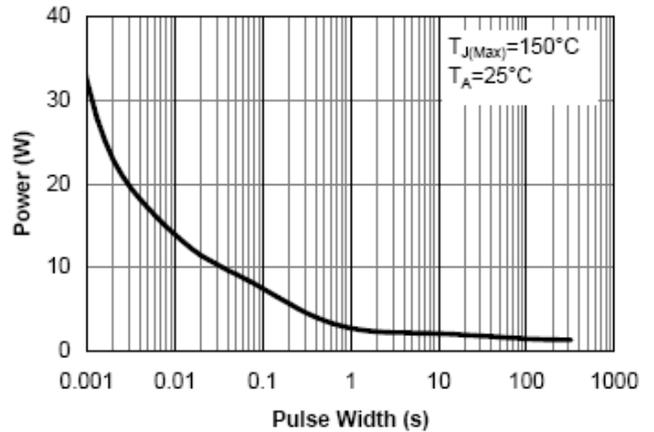


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

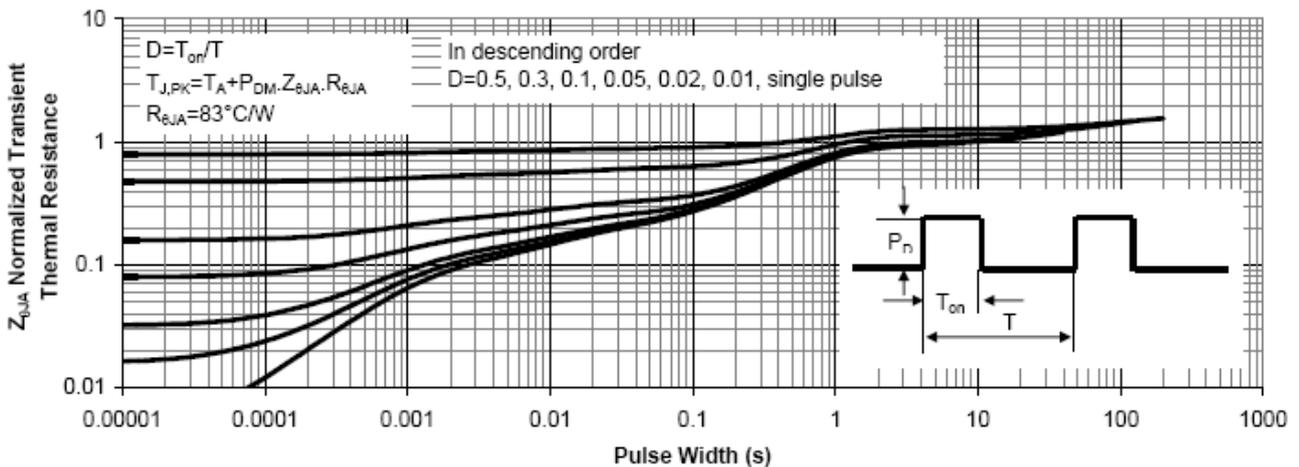
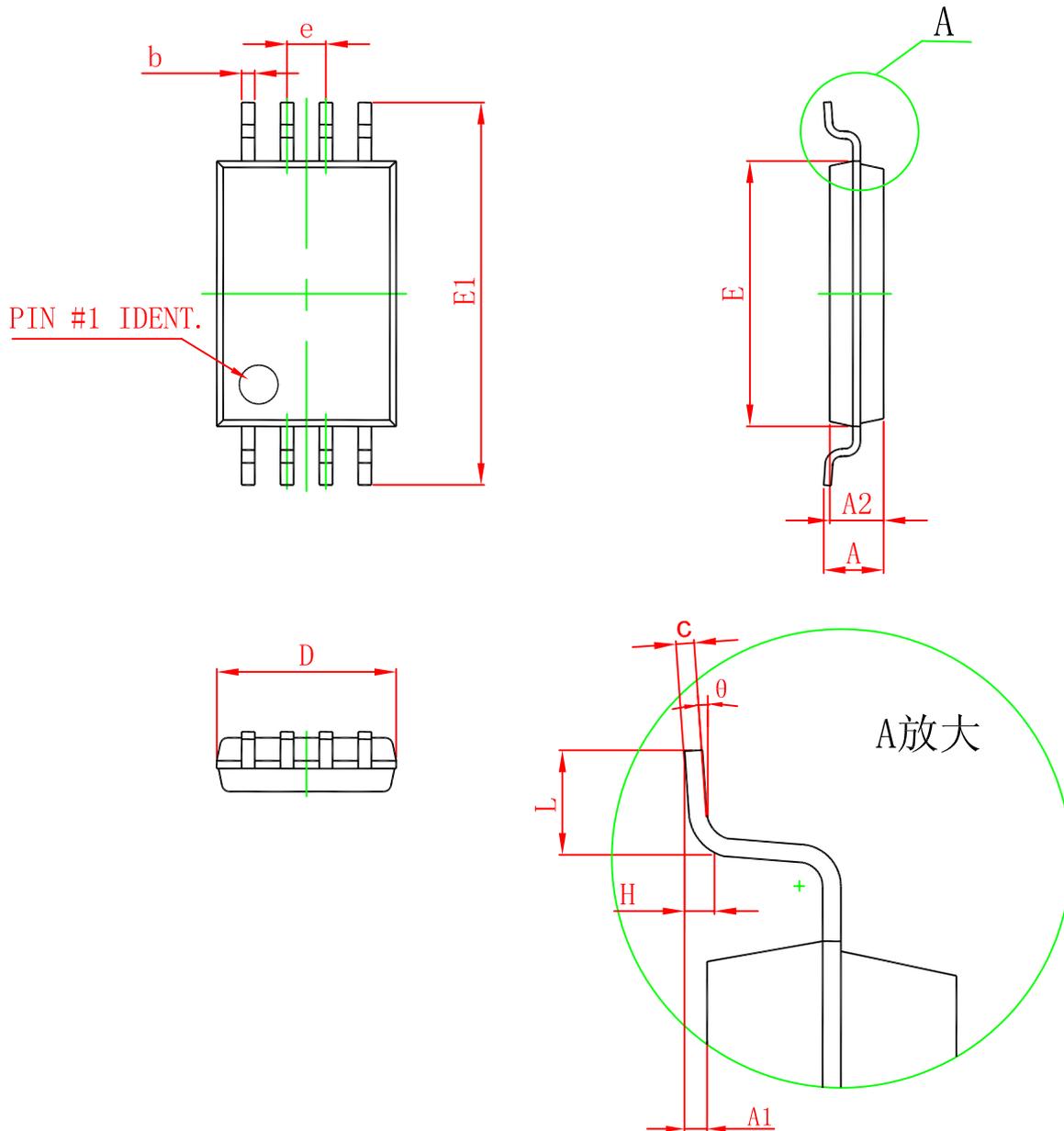


Figure 11: Normalized Maximum Transient Thermal Impedance

TSSOP8 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
D	2.900	3.100	0.114	0.122
E	4.300	4.500	0.169	0.177
b	0.190	0.300	0.007	0.012
c	0.090	0.200	0.004	0.008
E1	6.250	6.550	0.246	0.258
A		1.100		0.043
A2	0.800	1.000	0.031	0.039
A1	0.020	0.150	0.001	0.006
e	0.65 (BSC)		0.026 (BSC)	
L	0.500	0.700	0.020	0.028
H	0.25 (TYP)		0.01 (TYP)	
θ	1°	7°	1°	7°