

1. Description

The ESS8810 is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. Device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product ESS8810 is Pb-free.

2. Features

- 20V, $R_{DS(ON)}=11m\Omega(Typ.)$, $V_{GS}=4.5V$
 $R_{DS(ON)}=14m\Omega(Typ.)$, $V_{GS}=2.5V$
- Use trench MOSFET technology
- High density cell design for low $R_{DS(on)}$
- Material: Halogen free
- Reliable and rugged
- Avalanche Rated
- Low leakage current

3. Applications

- PWM applications
- Load switch
- Power management in portable/desktop PCs
- DC/DC conversion

100% UIS TESTED

4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
ESS8810	TSSOP8	ESS8810/LOT	Halogen free	Tape & Reel	3,000 PCS	UL 94V-0	13 inches

Table-1 Ordering information

5. Pin Configuration and Functions

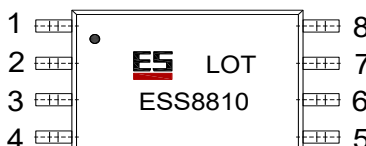
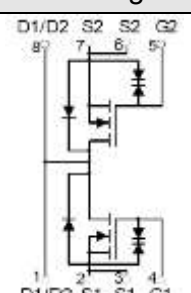
Pin	Function	Outline	Circuit Diagram
4	Gate1		
2/3	Source1		
1/8	Drain		
5	Gate2		
6/7	Source2		

Table-2 Pin configuration

6. Specification

Absolute Maximum Rating & Thermal Characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		BV_{DSS}	20	V
Gate-Source Voltage		V_{GS}	± 10	V
Continuous Drain Current	$T_A=25^{\circ}\text{C}$	I_D	9.5	A
	$T_A=75^{\circ}\text{C}$		7.4	
Maximum Power Dissipation	$T_A=25^{\circ}\text{C}$	P_D	2	W
	$T_A=75^{\circ}\text{C}$		1.2	
Pulsed Drain Current		I_{DM}	38	A
Avalanche Current, Single Pulse		I_{AS}	5.8	A
Avalanche Energy, Single Pulse		E_{AS}	5	mJ
Operating Junction Temperature		T_J	150	$^{\circ}\text{C}$
Lead Temperature		T_L	260	$^{\circ}\text{C}$
Storage Temperature Range		T_{stg}	-55 to 150	$^{\circ}\text{C}$

Thermal resistance ratings

Single Operation					
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance	$t \leq 10 \text{ s}$	$R_{\theta JA}$		62.5	$^{\circ}\text{C/W}$
Junction-to-Case Thermal Resistance	Steady State	$R_{\theta JC}$		9.5	

Note:

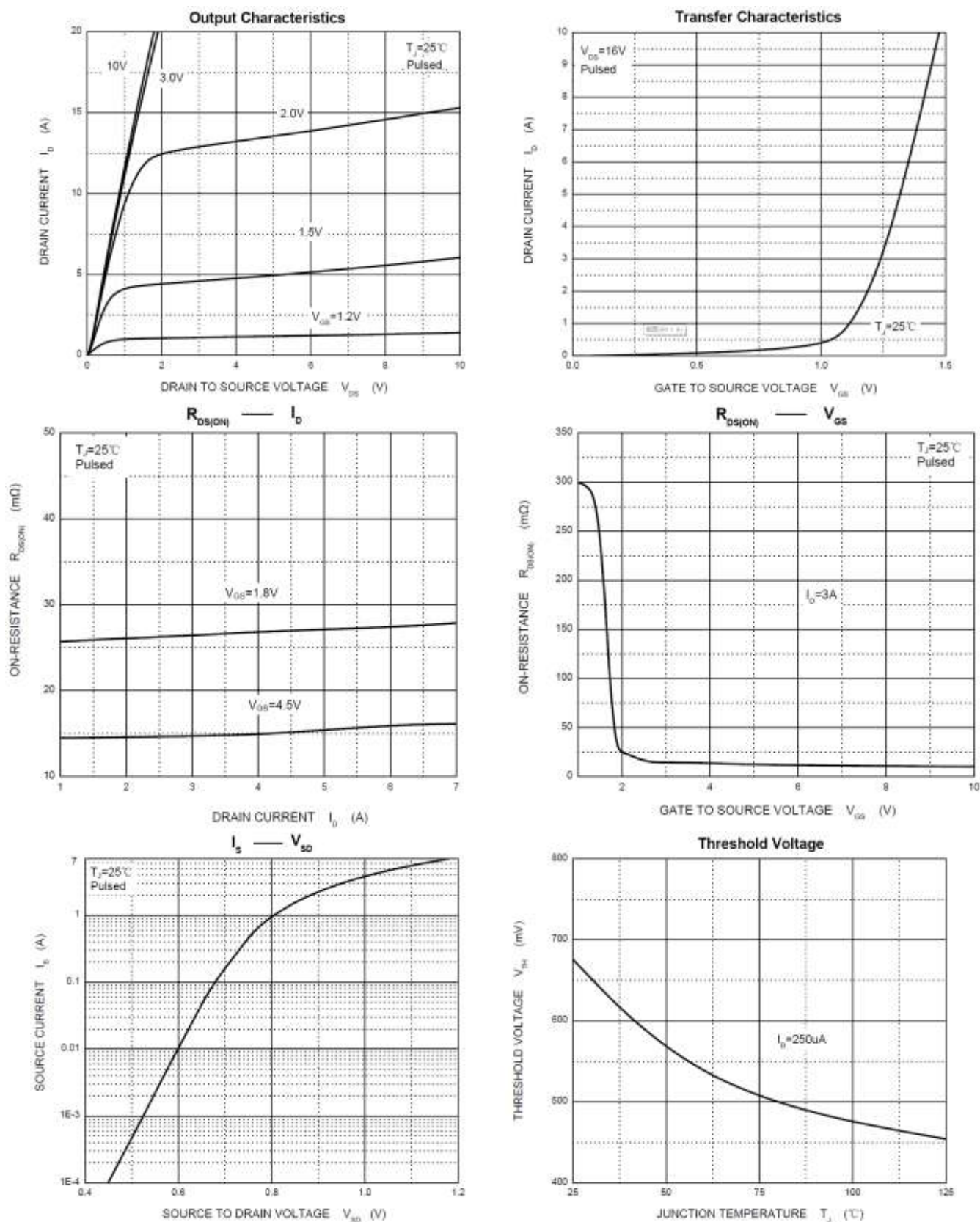
a: $T_J=25^{\circ}\text{C}$, $V_{DD}=20\text{V}$, $V_G=4.5\text{V}$, $L=0.3\text{mH}$, $R_g=25\Omega$

Electrical Characteristics

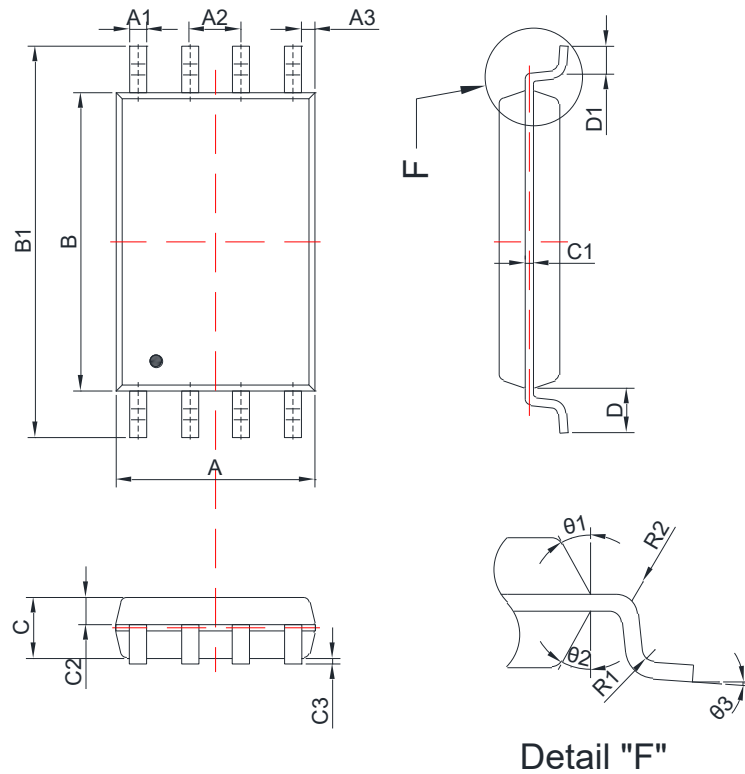
At TA = 25°C unless otherwise specified

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V			1.0	uA
Gate-to-source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±10V			±10	uA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D =250uA	0.5	0.7	0.9	V
Drain-to-source On-resistance	R _{DS(on)}	V _{GS} =4.5V, I _D =5A		11	14.5	mΩ
		V _{GS} =2.5V, I _D =5A		14	20.5	
Forward Trans conductance	g _{FS}	V _{DS} =5.0V, I _D =5A			40	S
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C _{ISS}	V _{GS} =0V, f=1MHz, V _{DS} =10V		1150		pF
Output Capacitance	C _{OSS}			165		
Reverse Transfer Capacitance	C _{RSS}			150		
Total Gate Charge	Q _{G(TOT)}	V _{GS} =4.5V, V _{DS} =10V, I _D =5A		15		nC
Gate-to-Source Charge	Q _{GS}			1		
Gate-to-Drain Charge	Q _{GD}			3.5		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	t _{d(ON)}	V _{GS} =4.5V, V _{DS} =10V, R _L =1.35Ω, R _G =3Ω		8		ns
Rise Time	t _r			11		
Turn-Off Delay Time	t _{d(OFF)}			50		
Fall Time	t _f			18		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} =0V, I _S =1A	0.45		1.5	V

7. Typical Characteristic

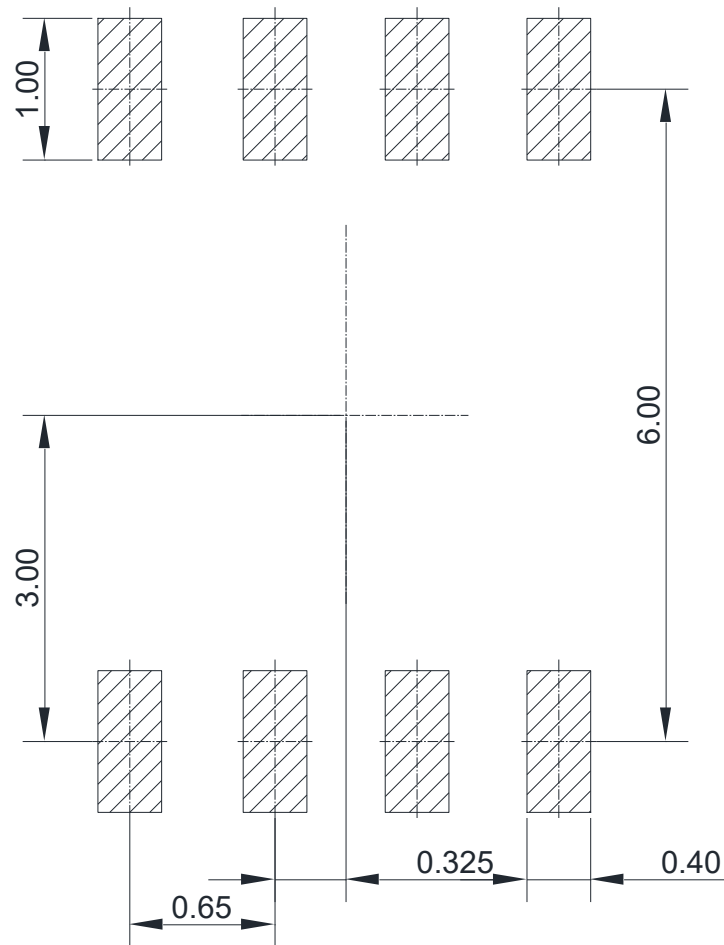


8. Dimension (TSSOP8)



Symbol	Millimeters		Symbol	Millimeters	
	Min	Max		Min	Max
A	2.90	3.10	C3	0.05	0.15
A1	0.20	0.30	D	1.00 REF	
A2	0.65 TYP		D1	0.50	0.70
A3	0.36	0.46	R1	0.15 TYP	
B	4.30	4.50	R2	0.15 TYP	
B1	6.30	6.50	θ1	12° TYP	
C	0.95	1.05	θ2	12° TYP	
C1	0.127 TYP		θ3	0° ~ 7°	
C2	0.39	0.49			

9. Recommended Soldering Footprint



DIMENSIONS: MILLIMETERS

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