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WP8810ES6

Enhancement Mode N-Channel Power MOSFET

SOT23-6/NMOS/20V/±12V/0.7V/5A/13mΩ

Rev0.3

20V, 13mΩ, 5A, N-Channel Enhancement Mode Power MOSFET

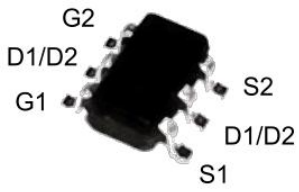
1.Features

- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package
- ESD Rating: HBM 2KV

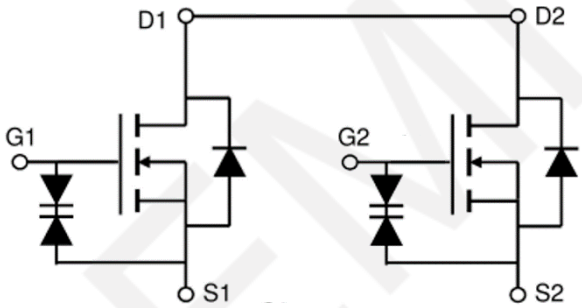
V_{DS} Typ	$R_{DS(on)}$ Typ.	I_D Max.
20V	13mΩ @ 4.5V	5A
	17mΩ @ 2.5V	

2.Applications

- Battery protection
- Load Switch
- Power management



SOT23-6
Pin Description



Schematic Diagram

3.Package Marking and Ordering Information

Part no.	Marking	Package	PCS/Reel	PCS/CTN.
WP8810ES6	8810E	SOT23-6	3,000	120,000

4.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	5	A
Pulsed Drain Current	I_{DM}	20	A
Power Dissipation	P_D	0.9	W

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.

5.Thermal Characteristic

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction to Ambient (Note 2)	$R_{\theta JA}$	139	℃/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.

6.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			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS} = 20V, V_{GS} = 0V			1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS} = ±12V, V_{DS} = 0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} =V_{GS} , I_{DS} =250μA	0.4	0.7	1.0	V
Drain to Source On-State Resistance	$R_{DS(on)}$	I_D =5A, V_{GS} = 4.5V		13	17	mΩ
		I_D =3A, V_{GS} = 2.5V		17	23	mΩ
Input Capacitance	C_{iss}	V_{GS} =0V, V_{DS} =10V, Frequency=1.0Mz		545		pF
Output Capacitance	C_{oss}			103		pF
Reverse Transfer Capacitance	C_{rss}			90		pF
Turn-ON Delay Time	$t_{d(on)}$	V_{DS} = 10V, V_{GS} = 5V, R_{GEN} = 3Ω , R_L=1.5Ω		0.5		ns
Turn-ON Rise Time	t_r			1		ns
Turn-OFF Delay Time	$t_{d(off)}$			12		ns
Turn-ON Fall Time	t_f			4		ns
Total Gate Charge	Q_g	V_{DS} = 10V, V_{GS} = 4.5V, I_D = 5A		8		nC
Gate-Source Charge	Q_{gs}			2.5		nC
Gate-Drain Charge	Q_{gd}			3		nC
Diode Forward Voltage	V_{SD}	I_S = 5A, V_{GS} = 0			1.2	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.

7.Typical electrical and thermal characteristics

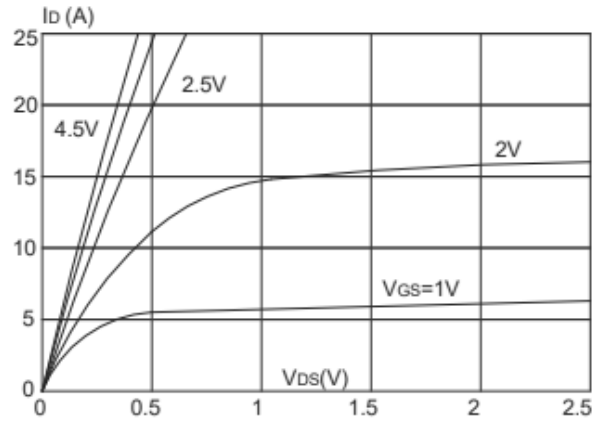


Figure 1 On-Region Characteristics

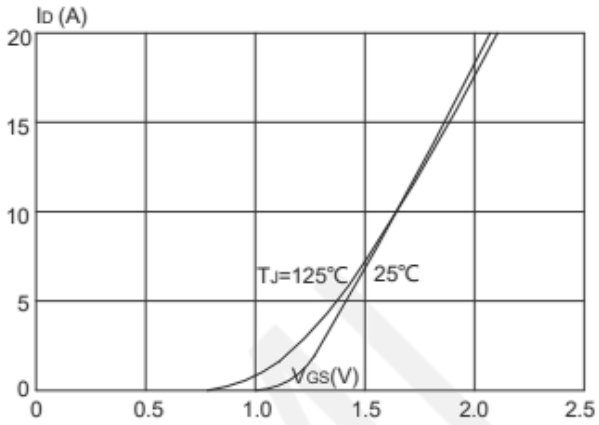


Figure 2 Transfer Characteristics

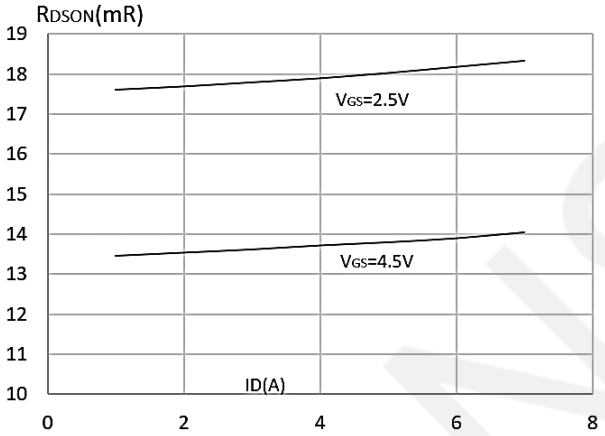


Figure 3 On-Resistance vs. Drain Current and Gate Voltage

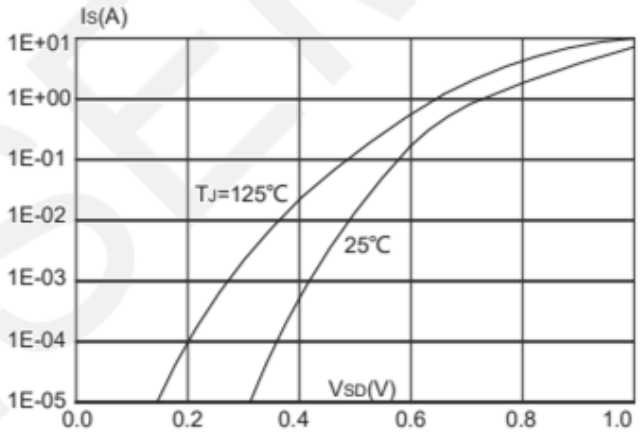


Figure 4 Body Diode Characteristics

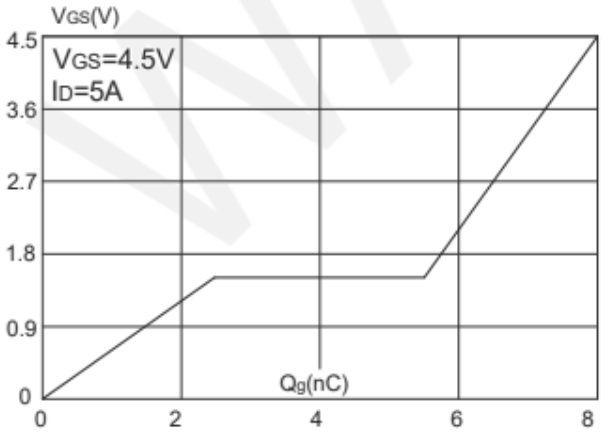


Figure 5 Gate Charge Characteristics

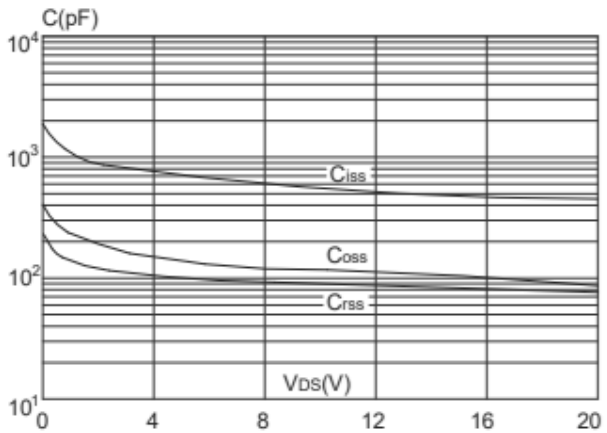


Figure 6 Capacitance Characteristics

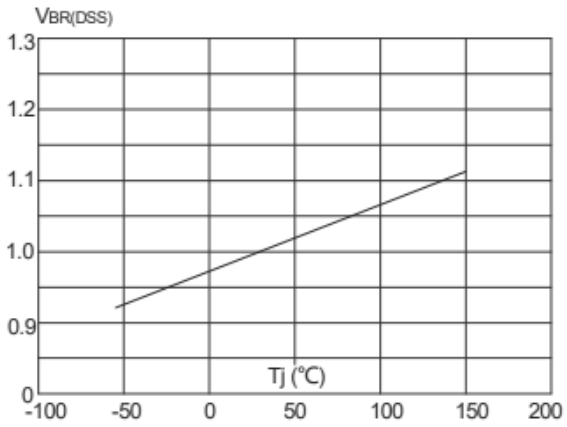


Figure 7 Normalized Breakdown Voltage vs. Junction Temperature

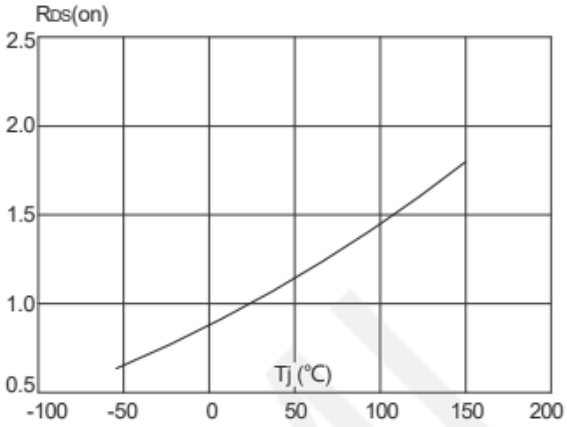


Figure 8 Normalized on Resistance vs. Junction Temperature

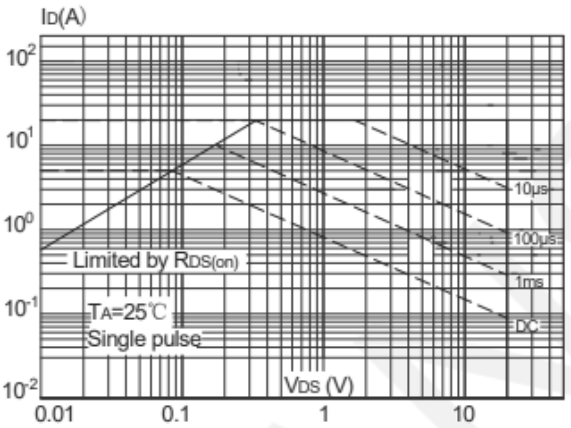


Figure 9 Maximum Forward Biased Safe Operating Area

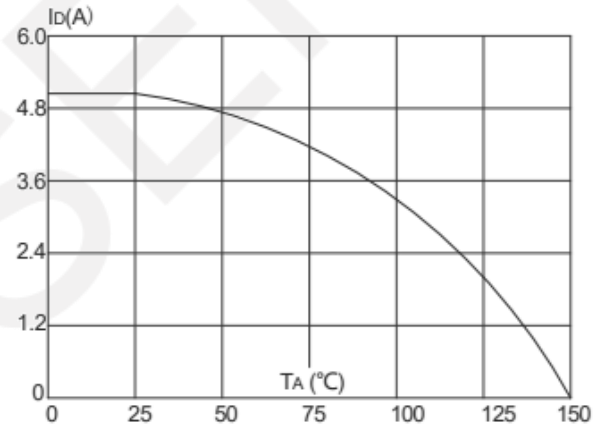


Figure 10 Single Pulse Power Rating Junction-To-Ambient

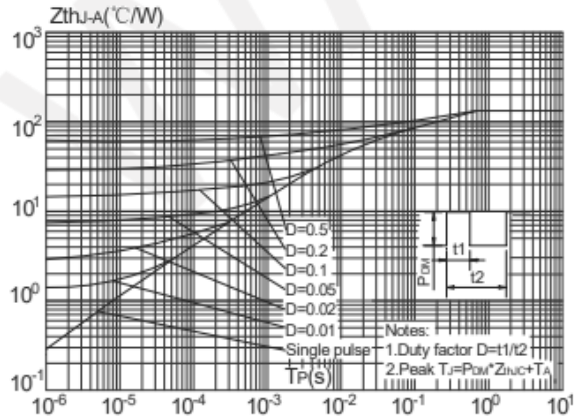
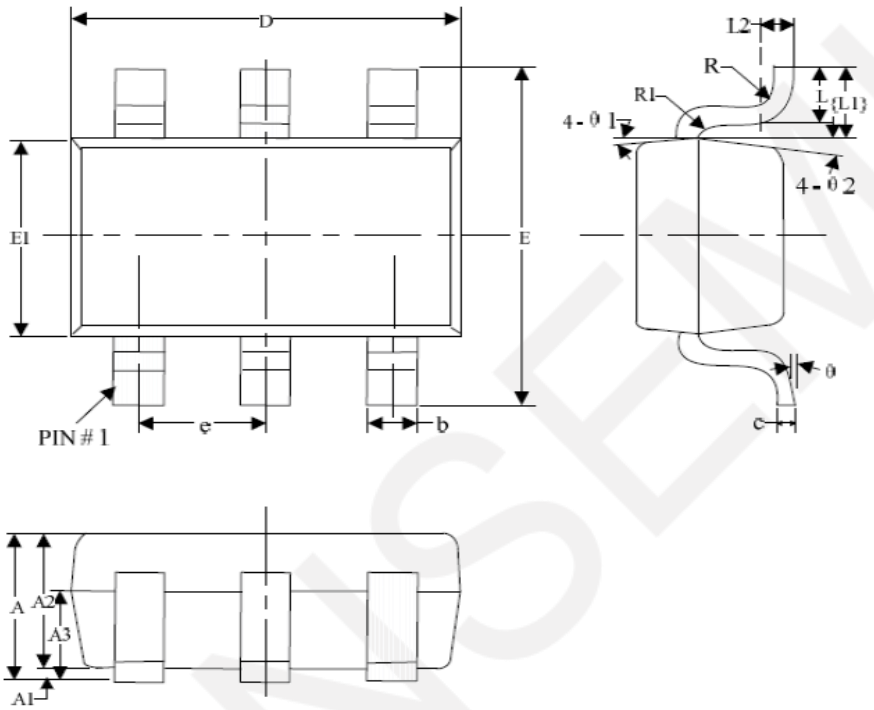


Figure11 Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

8.Package Dimensions

SOT23-6



Dimensions（unit：mm）

SYMBOL	MIN	NOM	MAX		SYMBOL	MIN	NOM	MAX
A	-	-	1.30		e	0.85	0.95	1.05
A1	0	-	0.15		L	0.35	0.45	0.60
A2	0.90	1.10	1.30		L1		0.59REF	
A3	0.60	0.65	0.70		L2		0.25BSC	
b	0.39	-	0.49		R	0.05	-	-
c	0.12	-	0.19		R1	0.05	-	0.02
D	2.85	2.95	3.15		θ	0°	-	8°
E	2.60	2.80	3.00		θ1	3°	5°	7°
E1	1.55	1.65	1.75		θ2	6°	8°	10°

9.Important Notice

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