Descriptions

This 20V 4.5A N-Channel MOSFET in a SOT-23 Plastic Package.

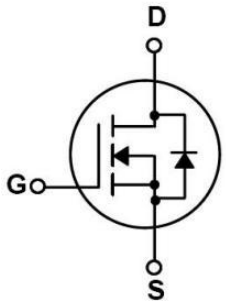
Features

- Low $R_{DS(ON)}$
- SOT-23 package
- Halogen-Free Product

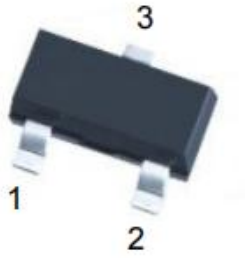
Applications

Battery management,High speed switch,low power DC to DC converter.

Equivalent Circuit



Pinning



PIN1：Gate　　PIN 2：Source　　PIN 3：Drain

Absolute Maximum Ratings(Ta=25℃)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	20	V
Gate-Source Voltage		V_{GSS}	±10	V
Drain Current – Continuous		I_D	4.5	A
Pulsed Drain Current		I_{DM}	12	A
Power Dissipation		P_D	1.4	W
Storage Temperature Range		T_{stg}	-55～150	℃
Maximum Junction-to-Ambient	t ≤ 10s	$R_{\theta JA}$	90	℃/W
Maximum Junction-to-Ambient	Steady-State		125	
Maximum Junction-to-Lead	Steady-State	$R_{\theta JL}$	80	

Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain–Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0 I_D=250μA	20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0 V_{DS}=20V			1.0	μA
Gate–Body Leakage.	I_{GSS}	V_{GS}=±10V V_{DS}=0V			±100	nA
Static Drain–Source On–Resistance	$R_{DS(on)1}$	V_{GS}=4.5V I_D=4.5A		21	25	mΩ
	$R_{DS(on)2}$	V_{GS}=2.5V I_D=4.0A		26	38	mΩ
Forward Transconductance	g_{FS}	V_{DS}=5V I_D=4.5A		6		S
Drain–Source Diode Forward Voltage	V_{SD}	V_{GS}=0V I_D=1A		0.74	1.2	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=50μA	0.5	0.6	1.0	V
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=10V, f=1MHz		500		pF
Output Capacitance	C_{oss}			255		
Reverse Transfer Capacitance	C_{rss}			210		
Gate resistance	R_g	V_{GS}=V_{DS}=0V, f=1MHz		1.7		Ω

Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Total Gate Charge	Q_g(10V)	V_{DS}=10V V_{GS}=10V I_D=4.5A		12.5		nC
Total Gate Charge	Q_g(4.5V)			6		
Gate Source Charge	Q_{gs}			1		
Gate Drain Charge	Q_{gd}			2		
Turn–On Delay Time	$t_{d(on)}$	V_{DS}=10V V_{GS}=10V R_{GEN}=3Ω R_L=1.7Ω		3		ns
Turn–On Rise Time	t_r			7.5		
Turn–Off Delay Time	$t_{d(off)}$			20		
Turn–Off Fall Time	t_f			6		

Electrical Characteristic Curve

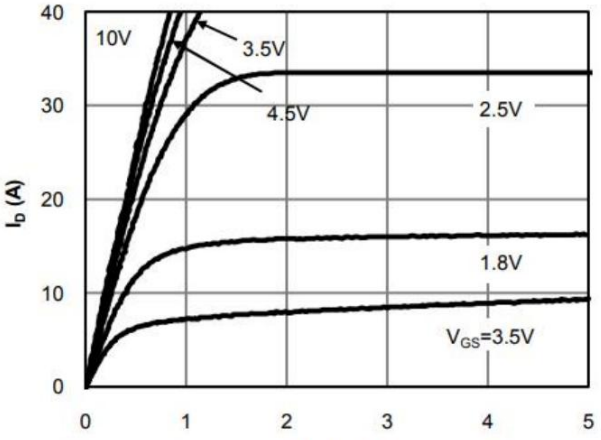


Fig 1: On-Region Characteristics

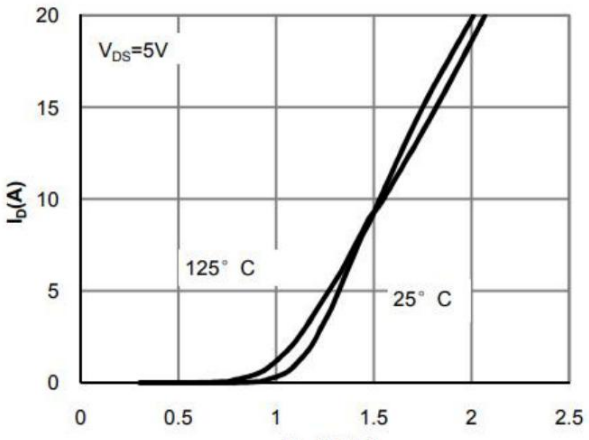


Figure 2: Transfer Characteristics

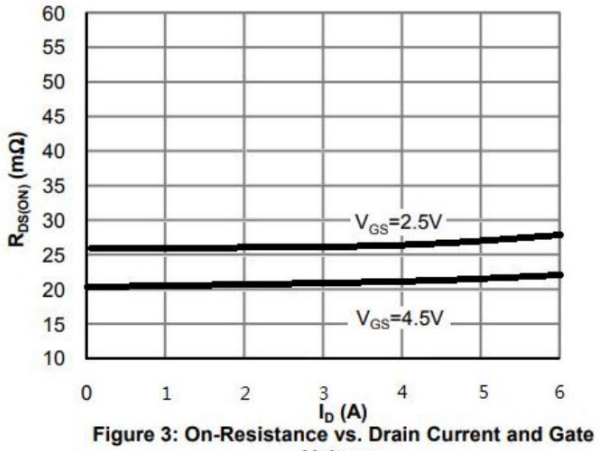


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

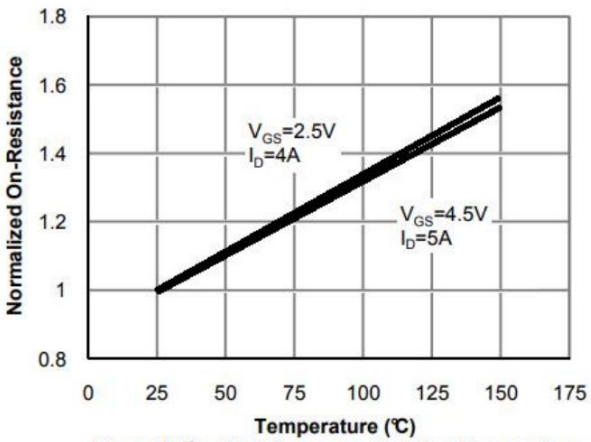


Figure 4: On-Resistance vs. Junction Temperature

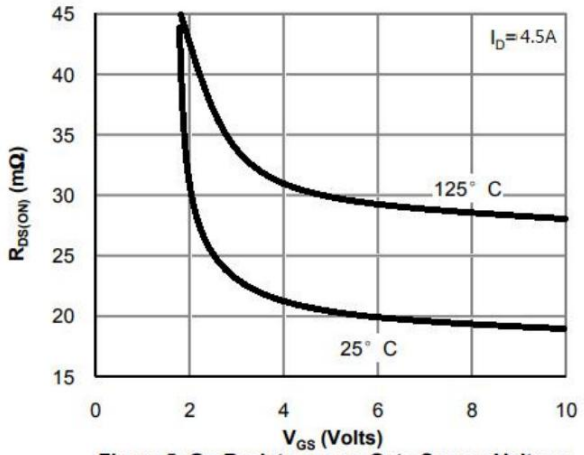


Figure 5: On-Resistance vs. Gate-Source Voltage

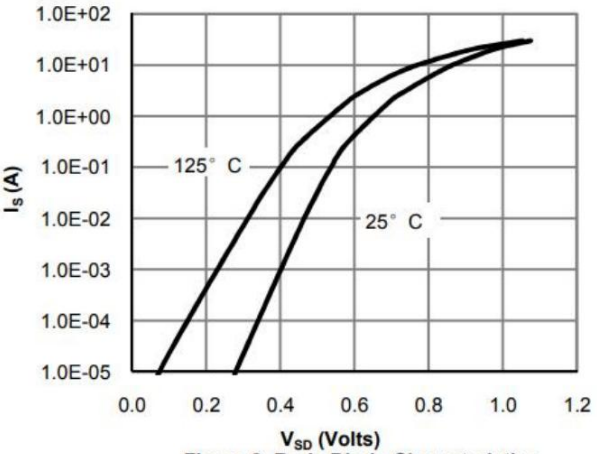


Figure 6: Body-Diode Characteristics

Electrical Characteristic Curve

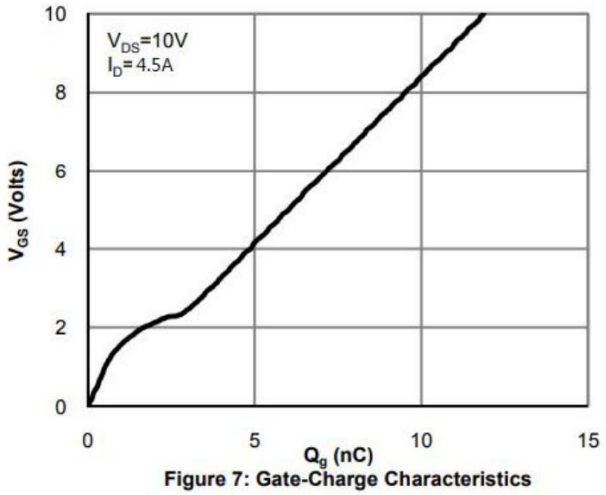


Figure 7: Gate-Charge Characteristics

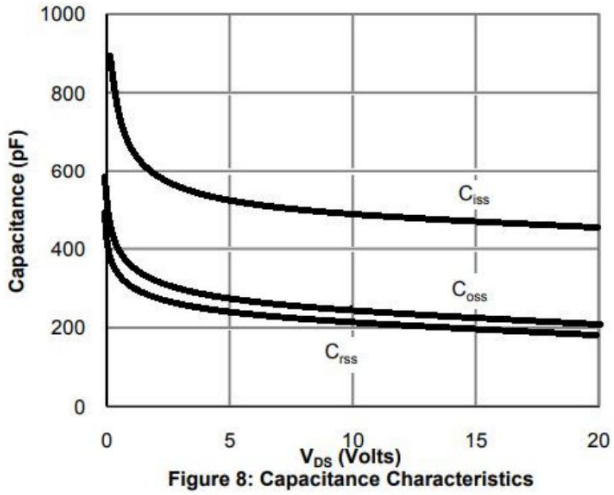


Figure 8: Capacitance Characteristics

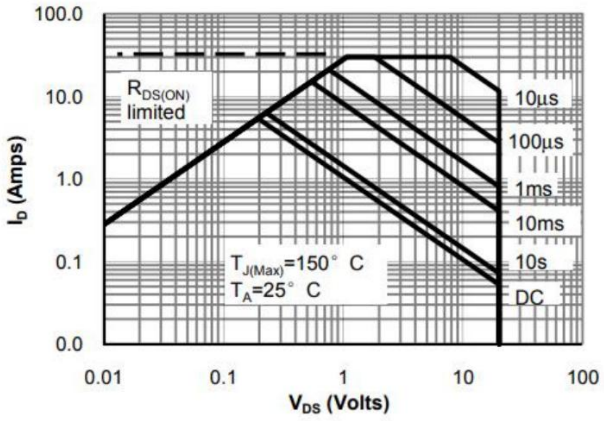


Figure 9: Maximum Forward Biased Safe Operating Area

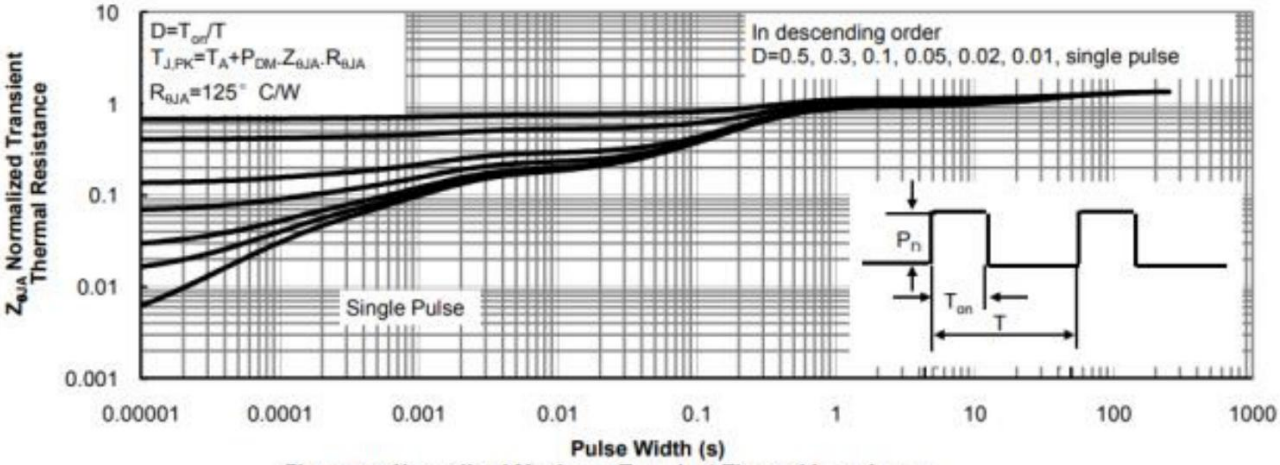
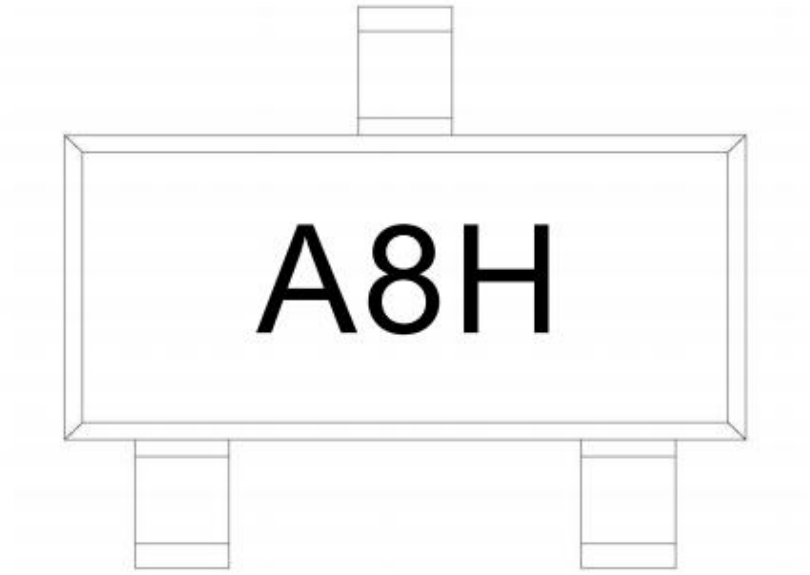


Figure 10: Normalized Maximum Transient Thermal Impedance

Marking Instructions



Note:

A8: Product Type Code

H: Company Code.

Packaging SPEC

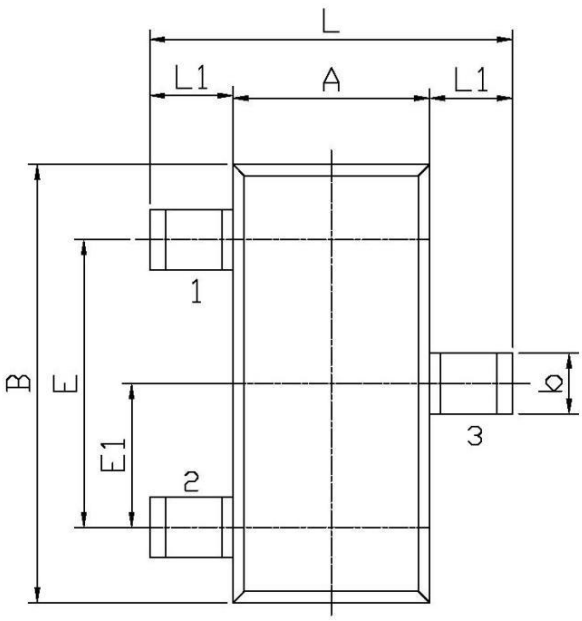
REEL INFORMATION

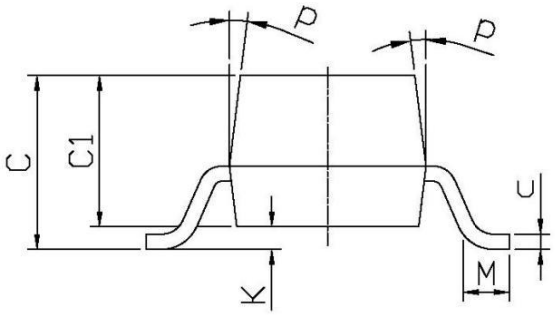
Package Type	Units					Dimension (unit: mm³)		
	Units/Reel	Reels/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Reel	Inner Box	Outer Box
SOT-23	3,000	10	30,000	6	180,000	7″ ×8	180×120×180	390×385×205

Package Outline Dimensions

SOT-23

单位：mm





Symbol	Dimensions In Millmeters		Symbol	Dimensions In Millmeters	
	Min	Max		Min	Max
L	2.2	2.7	C	1.30Max	
L1	0.45	0.65	C1	0.90	1.20
A	1.15	1.50	c	0.05	0.20
B	2.70	3.10	K	0	0.10
E	1.70	2.10	M	0.20MIN	
E1	0.85	1.05	P	7°	
b	0.35	0.55			