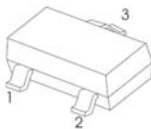


FEATURE

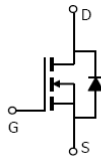
- High density cell design for low $R_{DS(ON)}$
- Voltage controlled small signal switch
- Rugged and reliable
- High saturation current capability

SOT-23



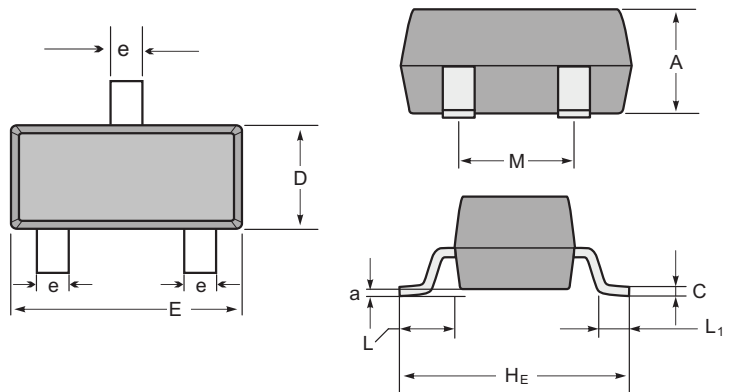
1. GATE
2. SOURCE
3. DRAIN

Equivalent circuit



Marking

Type number	Marking code
SI2306	A6SHB



SOT-23 mechanical data

UNIT		A	C	D	E	H _E	e	M	L	L ₁	a
mm	max	1.1	0.15	1.4	3.0	2.6	0.5	1.95	0.55 (ref)	0.36 (ref)	0.0
	min	0.9	0.08	1.2	2.8	2.2	0.3	1.7			0.15
mil	max	43	6	55	118	102	20	77	22 (ref)	14 (ref)	0.0
	min	35	3	47	110	87	12	67			6

Maximum Ratings and Thermal Characteristics (TA = 25°C unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V _{DS}	30	V
Gate-source Voltage	V _{GS}	±20	V
Drain Current (Continuous)	I _D	3.16	A
Drain Current (Pulsed) ^a	I _{DM}	10	A
Total Power Dissipation @TA=25°C	P _D	0.75	W
Operating Junction and Storage Temperature Range	T _j , T _{stg}	-55 to +150	°C
Thermal Resistance Junction to Ambient (PCB mounted)	R _{θJA}	100	°C/W

SI2306

Electrical Characteristics (TA=25°C, unless otherwise noted)

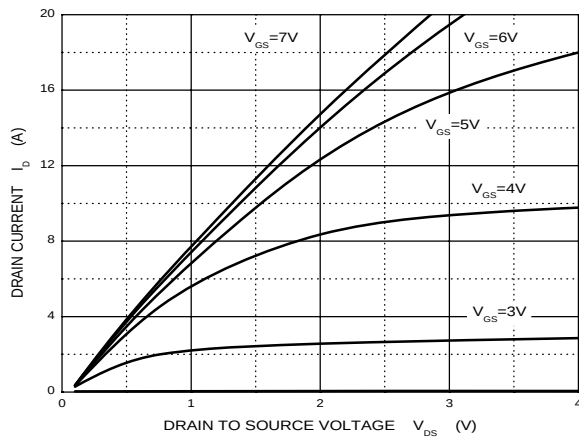
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DS}	V _{GS} = 0V, I _D =250μA	30			V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.0		3.0	
Gate-Body Leakage	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			0.5	μA
Drain-Source On-Resistance ^a	R _{DS(on)}	V _{GS} =10V, I _D =3.5A		0.038	0.047	Ω
		V _{GS} =4.5V, I _D =2.8A		0.052	0.065	
Forward Transconductance ^a	g _{fs}	V _{DS} =4.5V, I _D =2.5A		7.0		S
Diode Forward Voltage	V _{SD}	I _S =1.25A, V _{GS} =0V		0.8	1.2	V
Dynamic						
Gate Charge	Q _g	V _{DS} =15V, V _{GS} =5V, I _D =2.5A		3.0	4.5	nC
Total Gate Charge	Q _{gt}	V _{DS} =15V, V _{GS} =10V, I _D =2.5A		6	9	
Gate-Source Charge	Q _{gs}			1.6		
Gate-Drain Charge	Q _{gd}			0.6		
Gate Resistance	R _g	f =1.0MHz	2.5	5	7.5	Ω
Input Capacitance	C _{iSS}	V _{DS} =15V, V _{GS} =0V, f =1MHz		305		pF
Output Capacitance	C _{oSS}			65		
Reverse Transfer Capacitance	C _{rSS}			29		
Switching						
Turn-On Delay Time	t _{d(on)}	V _{DD} =15V, R _L =15Ω, I _D ≈1A, V _{GEN} =10V, R _g =6Ω		7	11	ns
Rise Time	t _r			12	18	
Turn-Off Delay Time	t _{d(off)}			14	25	
Fall Time	t _f			6	10	

Notes :

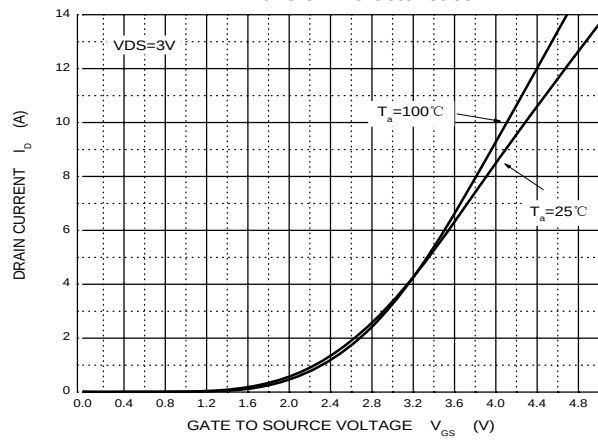
a. Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.

RATING AND CHARACTERISTIC CURVES (SI2306)

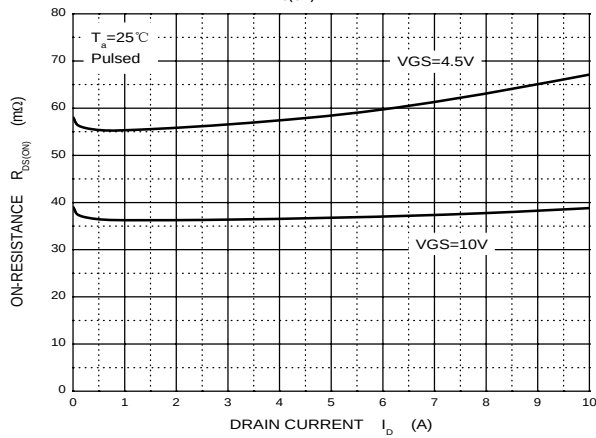
Output Characteristics



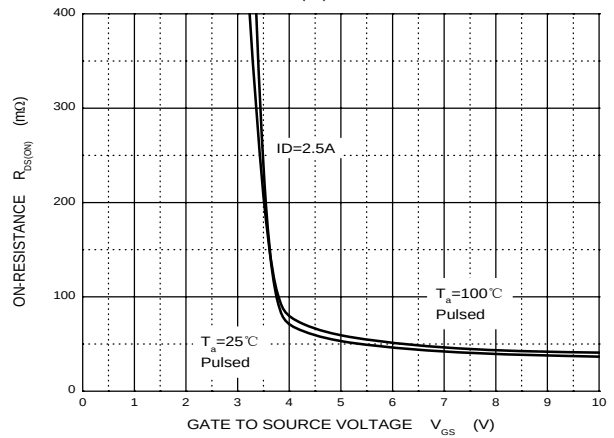
Transfer Characteristics



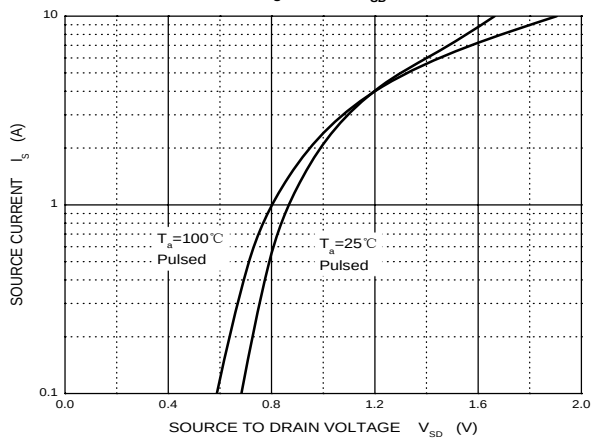
$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



Threshold Voltage

