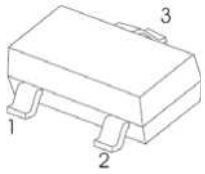
SOT-23-3L Plastic-Encapsulate MOSFETS

■ Features

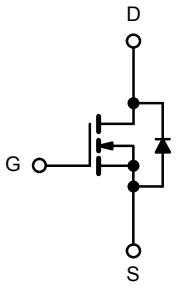
- $V_{DS\ (V)}$ = 40V
- I_D = 5.6 A (V_{GS} = 10V)
- $R_{DS(ON)}$ < 42mΩ (V_{GS} = 10V)
- $R_{DS(ON)}$ < 51mΩ (V_{GS} = 4.5V)
- Pb−Free Package May be Available. The G−Suffix Denotes a Pb−Free Lead Finish

SOT－23



1. GATE
2. SOURCE
3. DRAIN

Equivalent Circuit



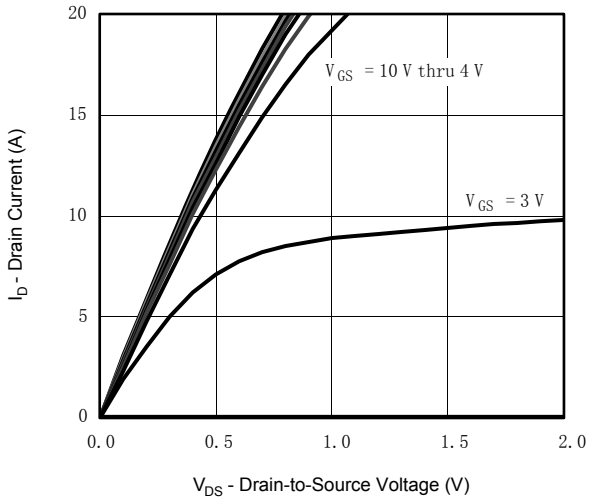
■ Absolute Maximum Ratings Ta = 25℃

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	Tc=25℃	I_D	5.6	A
	Tc=70℃		4.5	
	Ta=25℃		4.3	
	Ta=70℃		3.5	
Pulsed Drain Current		I_{DM}	20	
Power Dissipation	Tc=25℃	P_D	2.1	W
	Tc=70℃		1.3	
	Ta=25℃		1.25	
	Ta=70℃		0.8	
Thermal Resistance.Junction- to-Ambient		R_{thJA}	100	℃/W
Thermal Resistance.Junction- to-Foot		R_{thJF}	60	
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

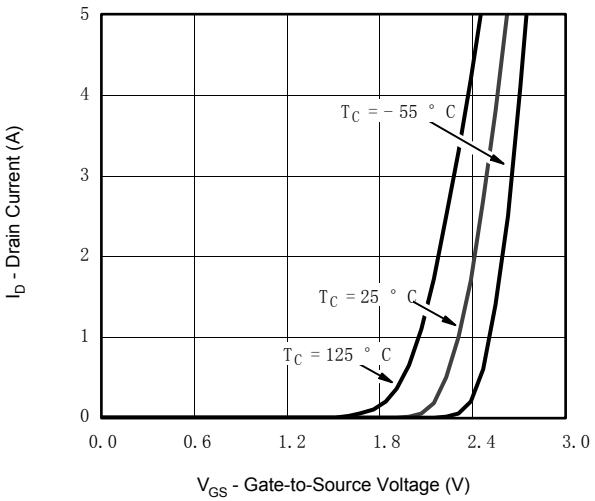
■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	40			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=40V, V_{GS}=0V			1	uA
		V_{DS}=40V, V_{GS}=0V, T_J=70℃			10	
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} , I_D=250uA	1.2		2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=4.3A			42	mΩ
		V_{GS}=4.5V, I_D=3.9A			51	
On State Drain Current	$I_{D(ON)}$	V_{DS}≥5V, V_{GS}=10V	20			A
Forward Transconductance	g_{FS}	V_{DS}=20V, I_D=4.3A		17		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=20V, f=1MHz		340		pF
Output Capacitance	C_{oss}			60		
Reverse Transfer Capacitance	C_{rss}			30		
Gate Resistance	R_g	V_{GS}=0V, V_{DS}=0V, f=1MHz	0.6		6.6	Ω
Total Gate Charge	Q_g	V_{GS}=20V, V_{DS}=10V, I_D=4.3A		5.8	9	nC
		V_{GS}=20V, V_{DS}=4.5V, I_D=4.3A		2.9	6	
Gate Source Charge	Q_{gs}			1.1		
Gate Drain Charge	Q_{gd}			0.9		
Turn-On DelayTime	$t_{d(on)}$	V_{DD} = 20V, R_L = 5.7Ω I_D=3.5A, V_{GEN} = 4.5V, R_G = 1Ω		12	20	ns
Turn-On Rise Time	t_r			50	75	
Turn-Off DelayTime	$t_{d(off)}$			10	20	
Turn-Off Fall Time	t_f			8	16	
Turn-On DelayTime	$t_{d(on)}$	V_{DD} = 20V, R_L = 5.7Ω I_D=3.5A, V_{GEN} = 10V, R_G = 1Ω		7	14	ns
Turn-On Rise Time	t_r			20	30	
Turn-Off DelayTime	$t_{d(off)}$			14	21	
Turn-Off Fall Time	t_f			8	16	
Body Diode Reverse Recovery Time	t_{rr}	I_F=3.5A, dI/dt=100A/μs, T_J=25°C		15	23	
Body Diode Reverse Recovery Charge	Q_{rr}			7	14	nC
Reverse Recovery Fall Time	t_a			11		ns
Reverse Recovery Rise Time	t_b			4		
Maximum Body-Diode Continuous Current	I_S	T_C=25℃			1.75	A
Pulse Diode Forward Current	I_{SM}				20	
Diode Forward Voltage	V_{SD}	I_S=3.5A,V_{GS}=0V			1.2	V

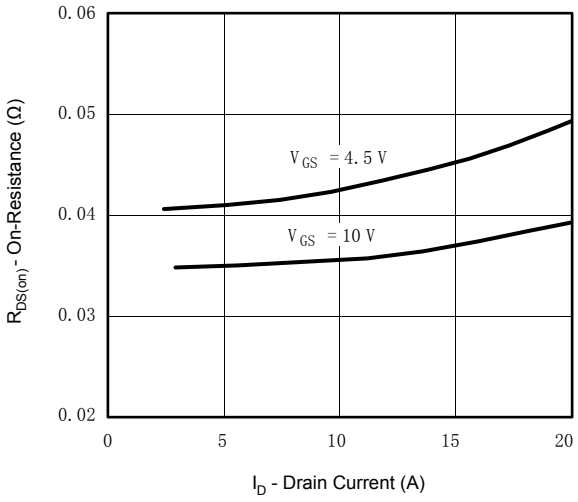
■ Typical Characterisitics



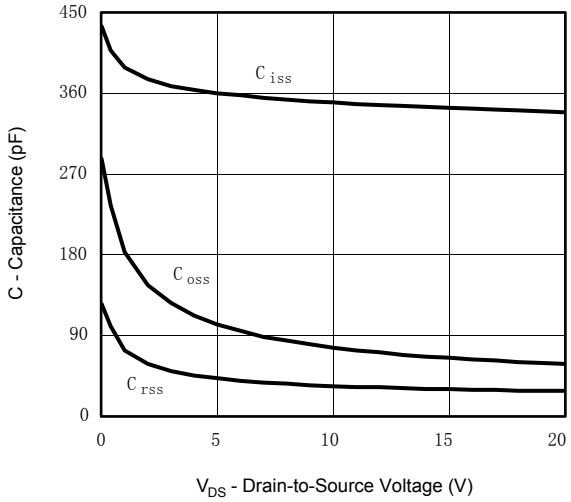
Output Characteristics



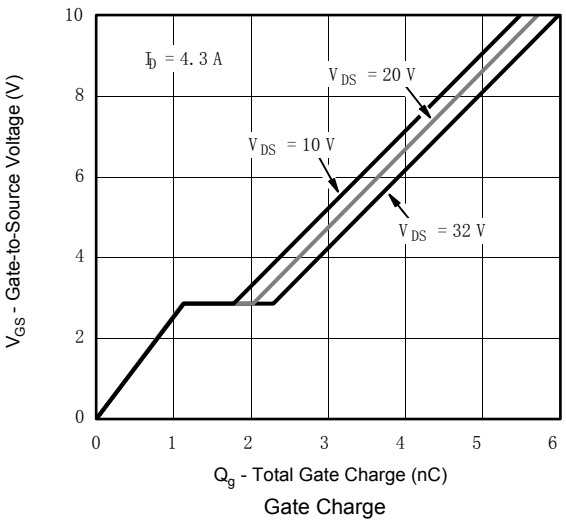
Transfer Characteristics



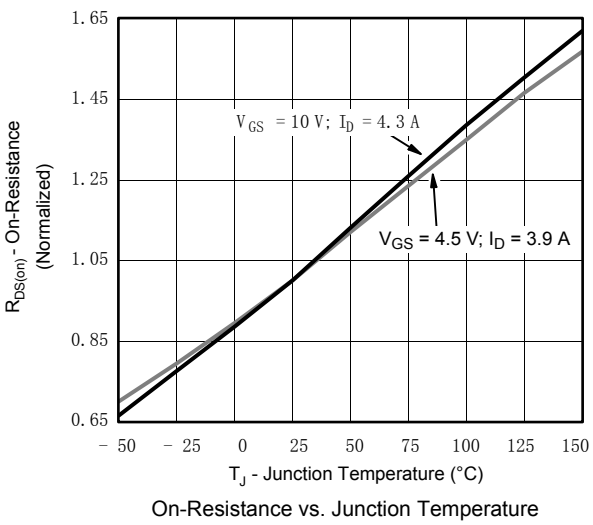
On-Resistance vs. Drain Current and Gate Voltage



Capacitance

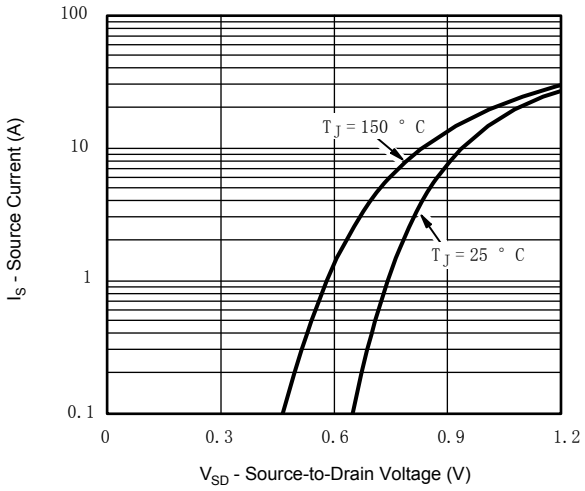


Gate Charge

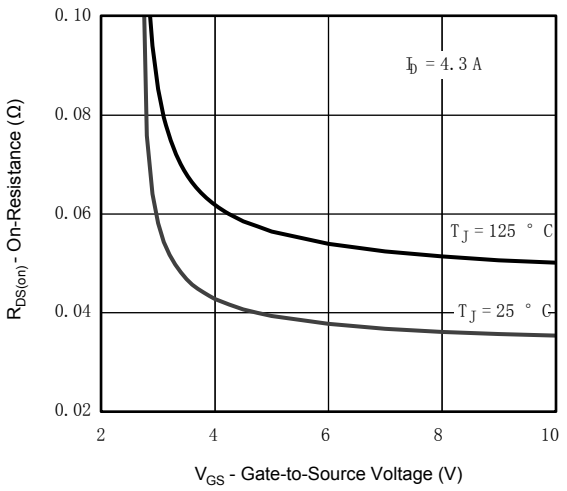


On-Resistance vs. Junction Temperature

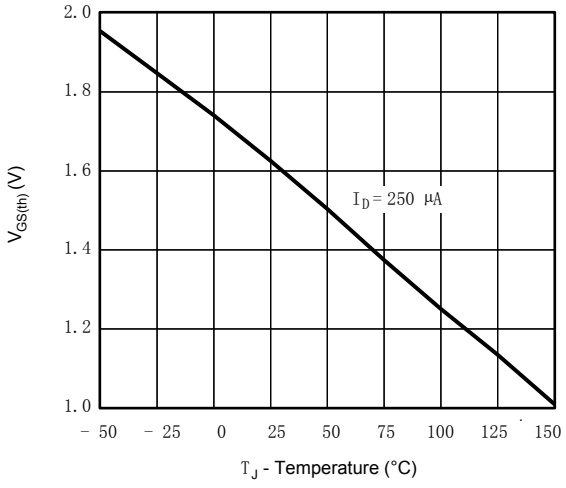
■ Typical Characterisitics



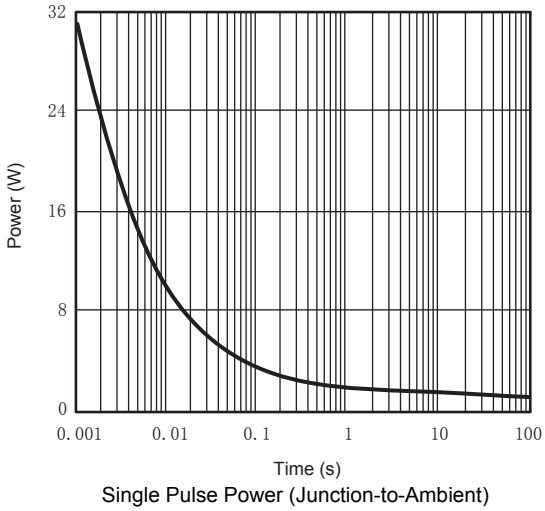
Source-Drain Diode Forward Voltage



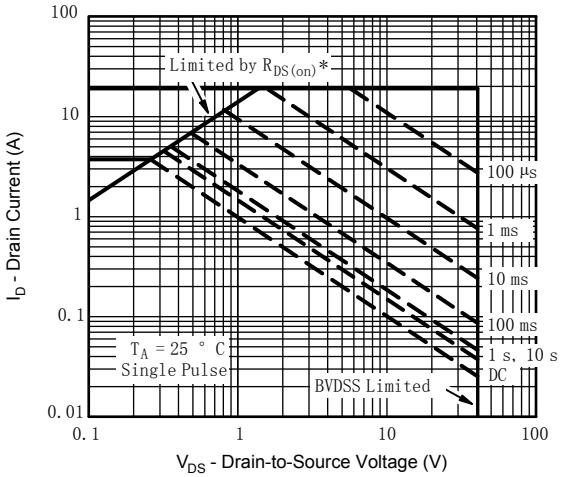
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

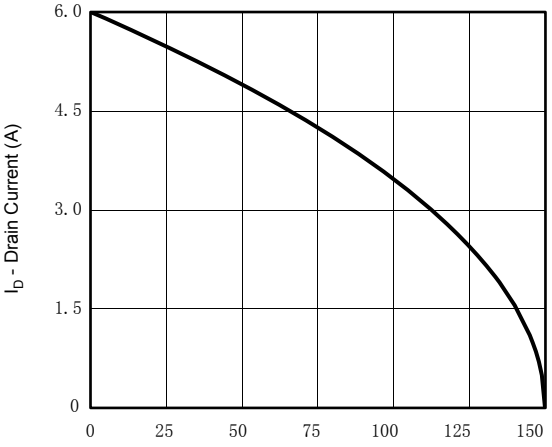


Single Pulse Power (Junction-to-Ambient)



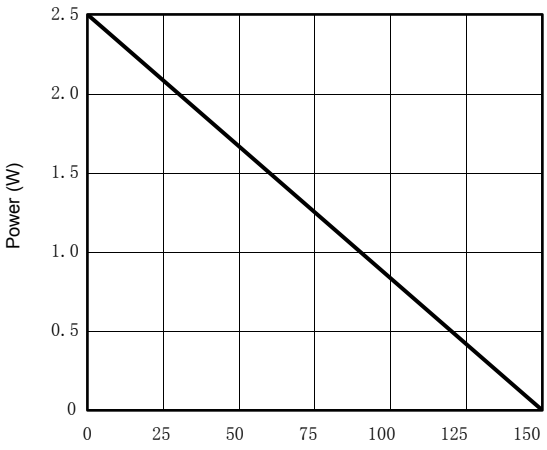
* V_{GS} > minimum V_{GS} at which $R_{DS(on)}$ is specified

Safe Operating Area, Junction-to-Ambient

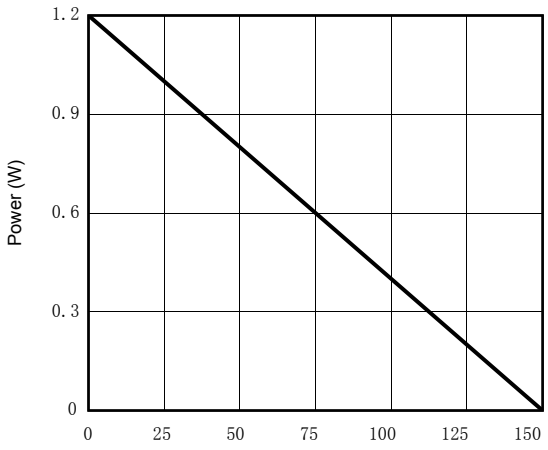


Current Derating

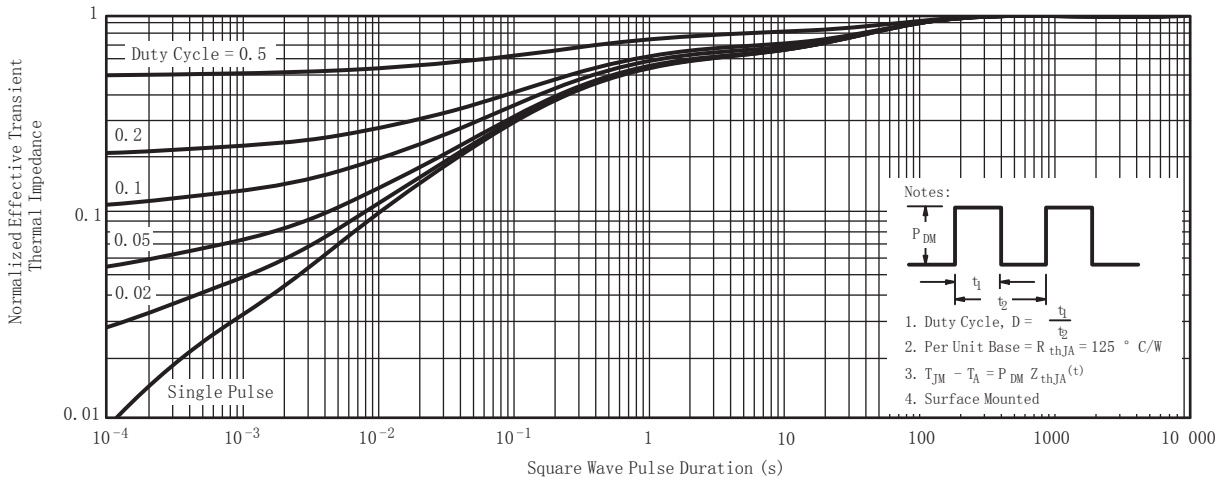
■ Typical Characterisitics



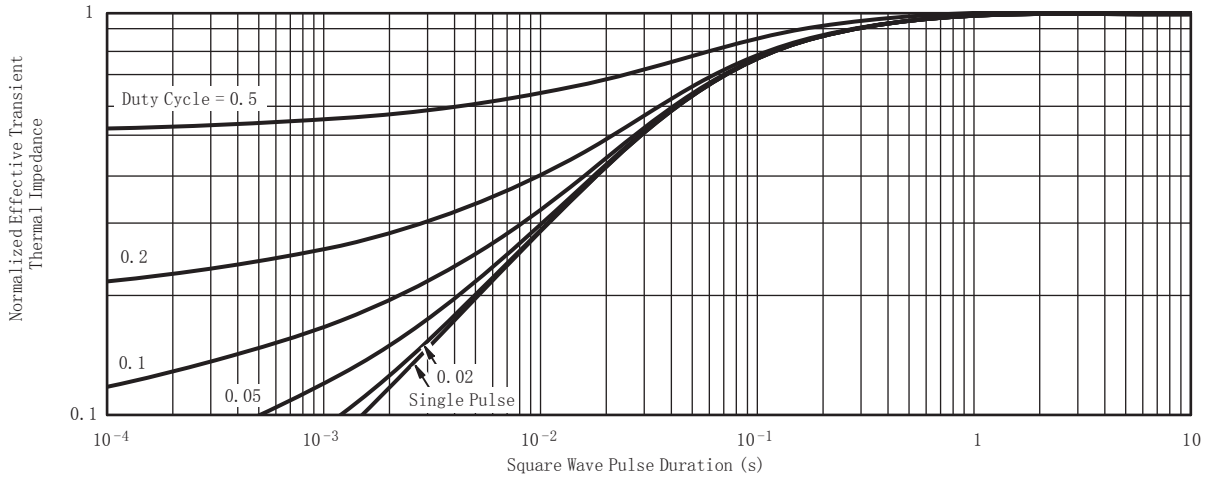
Power Derating, Junction-to-Foot



Power Derating, Junction-to-Ambient

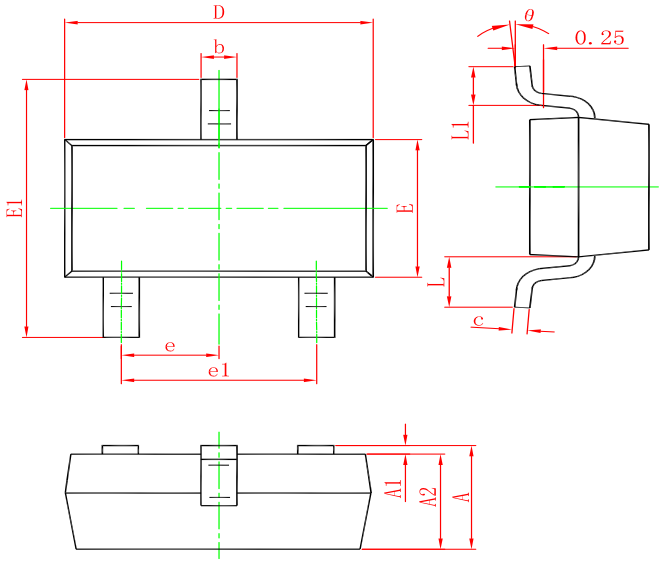


Normalized Thermal Transient Im pedance, Junction-to-Ambient



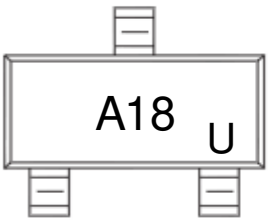
Normalized Thermal Transient Impedance, Junction-to-Foot

SOT-23 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

Marking



Ordering information

Order code	Package	Baseqty	Deliverymode
UMW SI2318A	SOT-23	3000	Tape and reel