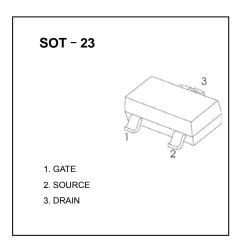
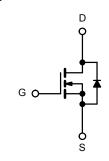


#### ■ Features

- V<sub>DS</sub> (V) = 40V
- ID = 5.6 A (VGS = 10V)
- RDS(ON)  $\leq$  36 m  $\Omega$  (VGS = 10V)
- RDS(ON) < 46 m  $\Omega$  (VGS = 4.5V)



### **Equivalent Circuit**



### ■ Absolute Maximum Ratings Ta = 25°C

Parameter		Symbol	Rating	Unit	
Drain-Source Voltage		VDS	40	V	
Gate-Source Voltage		Vgs	±20	V	
Continuous Drain Current	Tc=25℃		5.6	А	
	Tc=70°C	lD	4.5		
	Ta=25℃	טו	4.3		
	Ta=70℃		3.5		
Pulsed Drain Current		IDм	20		
Power Dissipation	Tc=25℃		2.1	W	
	Tc=70℃	PD	1.3		
	Ta=25℃	Γυ	1.25		
	Ta=70℃		0.8		
Thermal Resistance.Junction- to-Ambient		RthJA	100	°C/W	
Thermal Resistance.Junction- to-Foot		RthJF	60		
Junction Temperature		TJ	150	°C	
Storage Temperature Range		Tstg	-55 to 150		

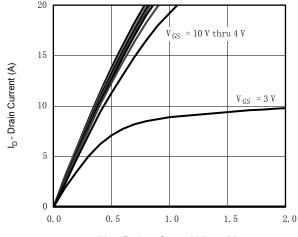


#### ■ Electrical Characteristics Ta = 25°C

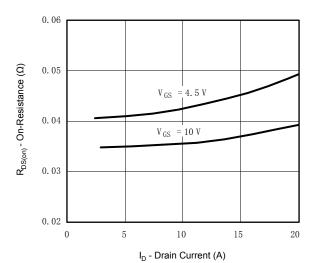
Parameter	Symbol	Test Conditions	Min	Тур	Max	Unit	
Drain-Source Breakdown Voltage	VDSS	ID=250 μ A, VGS=0V	40			V	
Zara Cata Valtana Drain Current	IDSS	VDS=40V, VGS=0V			1 10	uA	
Zero Gate Voltage Drain Current		V <sub>DS</sub> =40V, V <sub>GS</sub> =0V, T <sub>J</sub> =70°C				uA	
Gate-Body Leakage Current	Igss	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±100	nA	
Gate Threshold Voltage	VGS(th)	Vps=Vgs , Ip=250uA	1.2		2.5	V	
Static Drain-Source On-Resistance	RDS(On)	Vgs=10V, Ip=4.7A			36	mΩ	
		Vgs=4.5V, Ip=3.9A	5V, ID=3.9A		46		
On State Drain Current	ID(ON)	V <sub>D</sub> s≥5V, V <sub>G</sub> s=10V	20			Α	
Forward Transconductance	gFS	Vps=20V, Ip=4.3A		17		S	
Input Capacitance	Ciss			340		pF	
Output Capacitance	Coss	Vgs=0V, Vps=20V, f=1MHz		60			
Reverse Transfer Capacitance	Crss			30			
Gate Resistance	Rg	Vgs=0V, Vps=0V, f=1MHz	0.6		6.6	Ω	
Total Gate Charge	Qg	Vgs=20V, Vps=10V, Ip=4.3A		5.8	9		
				2.9	6	nC	
Gate Source Charge	Qgs	Vgs=20V, Vds=4.5V, Id=4.3A		1.1			
Gate Drain Charge	Qgd	1		0.9			
Turn-On DelayTime	td(on)			12	20	ns	
Turn-On Rise Time	tr	$V_{DD} = 20V, R_{L} = 5.7\Omega$		50	75		
Turn-Off DelayTime	td(off)	ID=3.5A, VGEN = 4.5V, RG = $1\Omega$		10	20		
Turn-Off Fall Time	tf			8	16		
Turn-On DelayTime	td(on)			7	14	ns	
Turn-On Rise Time	tr	$V_{DD} = 20V, R_{L} = 5.7\Omega$		20	30		
Turn-Off DelayTime	td(off)	ID=3.5A, VGEN = 10V, RG = $1\Omega$		14	21		
Turn-Off Fall Time	tf			8	16		
Body Diode Reverse Recovery Time	trr			15	23		
Body Diode Reverse Recovery Charge	Qrr	IF=3.5A, dI/dt=100A/μs, Tյ=25°C		7	14	nC	
Reverse Recovery Fall Time	ta	IF-3.3A, αΙ/αί-100A/μS, 13-25 C		11		ns	
Reverse Recovery Rise Time	tb			4			
Maximum Body-Diode Continuous Current	Is	Tc=25℃			1.75	Α	
Pulse Diode Forward Current	Ism				20		
Diode Forward Voltage	VsD	Is=3.5A,VGS=0V			1.2	V	



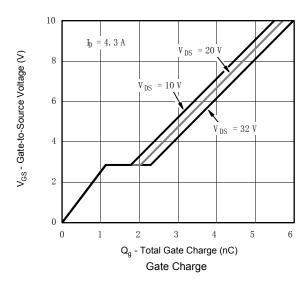
#### ■ Typical Characterisitics

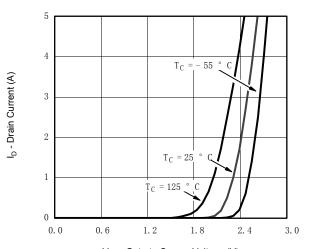


V<sub>DS</sub> - Drain-to-Source Voltage (V)
Output Characteristics

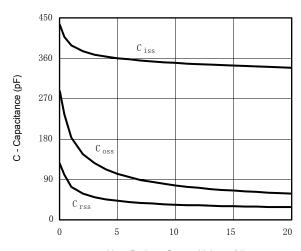


On-Resistance vs. Drain Current and Gate Voltage



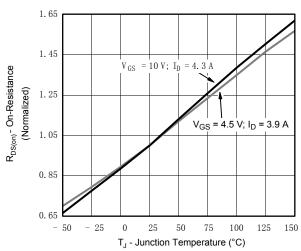


V<sub>GS</sub> - Gate-to-Source Voltage (V) Transfer Characteristics



V<sub>DS</sub> - Drain-to-Source Voltage (V)

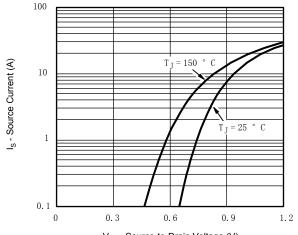
Capacitance



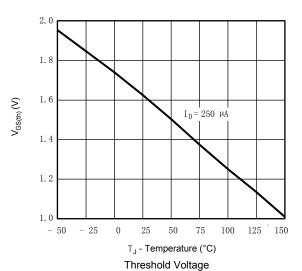
On-Resistance vs. Junction Temperature



#### ■ Typical Characterisitics

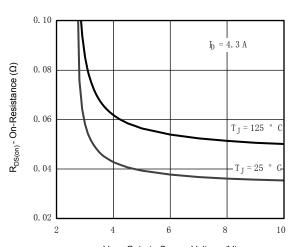


 $V_{SD}$  - Source-to-Drain Voltage (V) Source-Drain Diode Forward Voltage

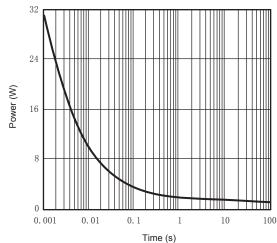


 $\begin{array}{c} 100 \\ \hline \\ 10 \\ \hline \\ 100 \\ \hline \\ 100$ 

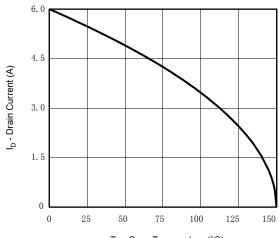
 $v_{DS}$  - Drain-to-Source voltage (v) \*  $V_{GS}$  > minimum  $V_{GS}$  at which  $R_{DS(on)}$  is specified Safe Operating Area, Junction-to-Ambient



 $\rm V_{GS}$  - Gate-to-Source Voltage (V) On-Resistance vs. Gate-to-Source Voltage



Single Pulse Power (Junction-to-Ambient)

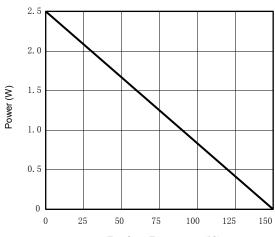


T<sub>C</sub> - Case Temperature (°C)

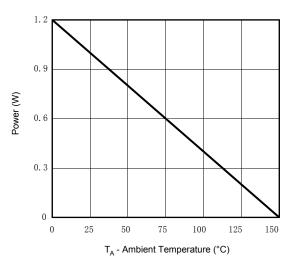
Current Derating



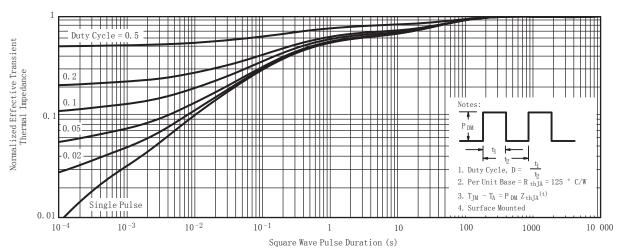
#### ■ Typical Characterisitics



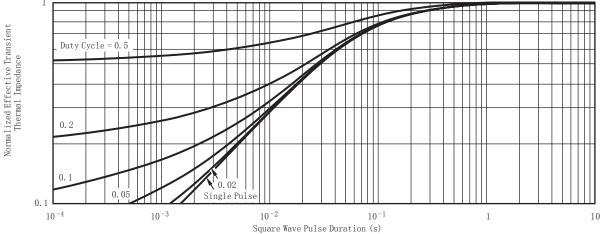
 ${\rm T_C}$  - Case Temperature (°C) Power Derating, Junction-to-Foot



Power Derating, Junction-to-Ambient



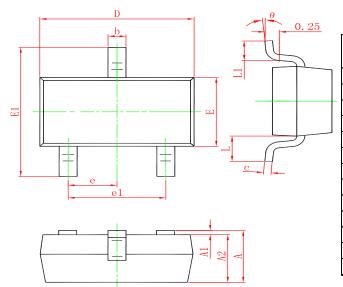
Normalized Thermal Transient Impedance, Junction-to-Ambient



 $Normalized\ Thermal\ Transient\ Impedance,\ Junction-to-Foot$ 

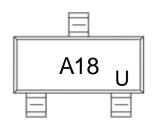


### **SOT-23 PACKAGE OUTLINE DIMENSIONS**



Symbol	Dimensions	In Millimeters	Dimensions In Inches		
	Min.	Max.	Min.	Max.	
Α	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	
С	0.080	0.150	0.003	0.006	
D	2.800	3.000	0.110	0.118	
Е	1.200	1.400	0.047	0.055	
E1	2.250	2.550	0.089	0.100	
е	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