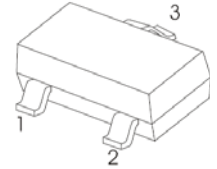


P-Channel Enhancement MOSFET

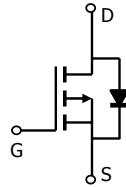
■ Features

- $V_{DS} (V) = -30V$
- $I_D = -4.2 A$ ($V_{GS} = -10V$)
- $R_{DS(ON)} < 65m\Omega$ ($V_{GS} = -4.5V$)
- $R_{DS(ON)} < 120m\Omega$ ($V_{GS} = -2.5V$)

SOT - 23



1. GATE
2. SOURCE
3. DRAIN



■ Absolute Maximum Ratings $T_a = 25^\circ C$

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 12	
Continuous Drain Current $T_a = 25^\circ C$ $T_a = 70^\circ C$	I_D	-4.2	A
		-3.5	
Pulsed Drain Current	I_{DM}	-30	
Power Dissipation $T_a = 25^\circ C$ $T_a = 70^\circ C$	P_D	1.4	W
		1	
Thermal Resistance.Junction- to-Ambient $t \leq 10s$	R_{thJA}	90	$^\circ C/W$
Thermal Resistance.Junction- to-Ambient		125	
Thermal Resistance.Junction- to-Case	R_{thJC}	60	
Junction Temperature	T_J	150	$^\circ C$
Junction and Storage Temperature Range	T_{stg}	-55 to 150	

P-Channel Enhancement MOSFET

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DS}	$I_D = -250 \mu A, V_{GS} = 0V$	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -24V, V_{GS} = 0V$			-1	μA
		$V_{DS} = -24V, V_{GS} = 0V, T_J = 55^\circ C$			-5	
Gate-Body leakage current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 12V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250 \mu A$	-0.4		-1.3	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -4A$			65	m Ω
		$V_{GS} = -2.5V, I_D = -1A$			120	
On state drain current	$I_{D(on)}$	$V_{GS} = -4.5V, V_{DS} = -5V$	-25			A
Forward Transconductance	g_{FS}	$V_{DS} = -5V, I_D = -5A$	7	11		S
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = -15V, f = 1MHz$		954		pF
Output Capacitance	C_{oss}			115		
Reverse Transfer Capacitance	C_{rss}			77		
Gate resistance	R_g	$V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$		6		Ω
Total Gate Charge	Q_g	$V_{GS} = -4.5V, V_{DS} = -15V, I_D = -4A$		9.4		nC
Gate Source Charge	Q_{gs}			2		
Gate Drain Charge	Q_{gd}			3		
Turn-On DelayTime	$t_{d(on)}$	$V_{GS} = -10V, V_{DS} = -15V, R_L = 3.6 \Omega, R_{GEN} = 6 \Omega$		6.3		ns
Turn-On Rise Time	t_r			3.2		
Turn-Off DelayTime	$t_{d(off)}$			38.3		
Turn-Off Fall Time	t_f			12		
Body Diode Reverse Recovery Time	t_{rr}	$I_F = -4A, di/dt = 100A/\mu s$		20.2		
Body Diode Reverse Recovery Charge	Q_{rr}	$I_F = 5A, di/dt = 100A/\mu s$		11.2		nC
Maximum Body-Diode Continuous Current	I_S				-2.2	A
Diode Forward Voltage	V_{SD}	$I_S = -1A, V_{GS} = 0V$		-0.75	-1	V

■ Typical Characteristics

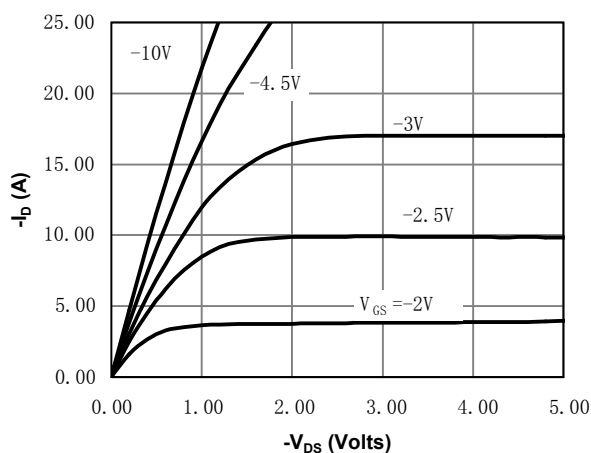


Fig 1: On-Region Characteristics

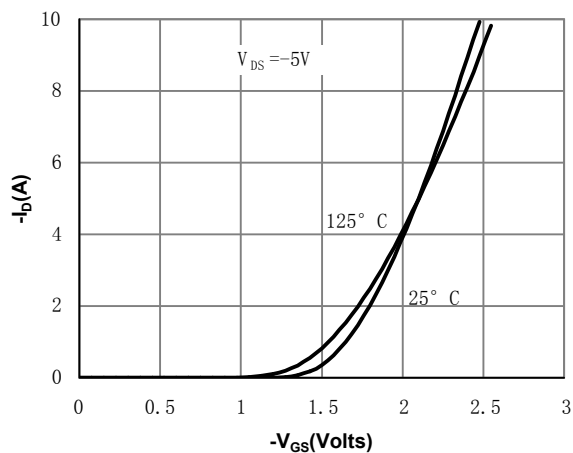


Figure 2: Transfer Characteristics

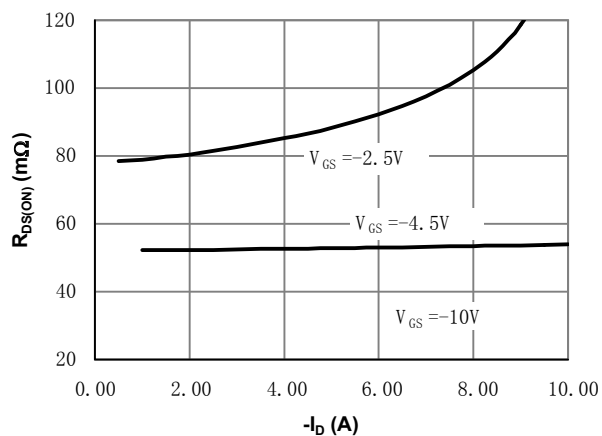


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

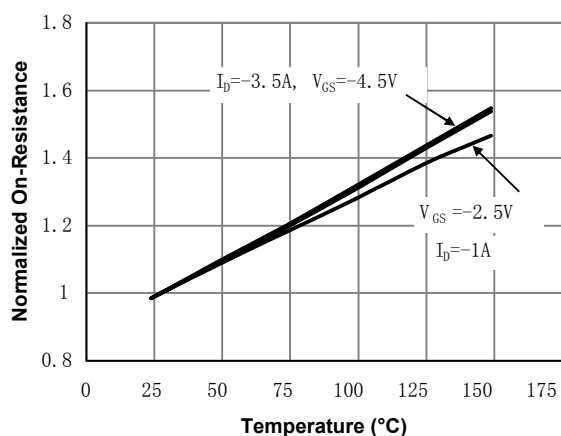


Figure 4: On-Resistance vs. Junction Temperature

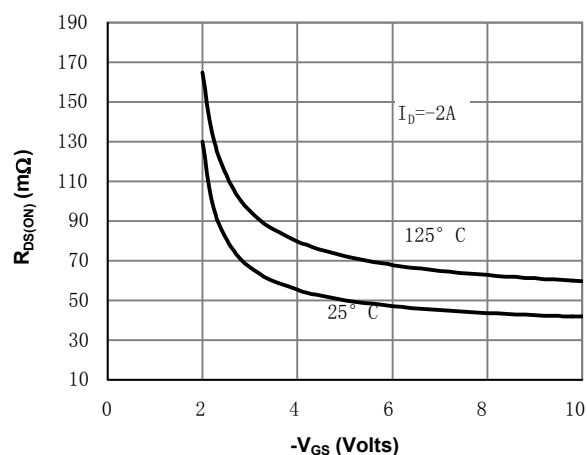


Figure 5: On-Resistance vs. Gate-Source Voltage

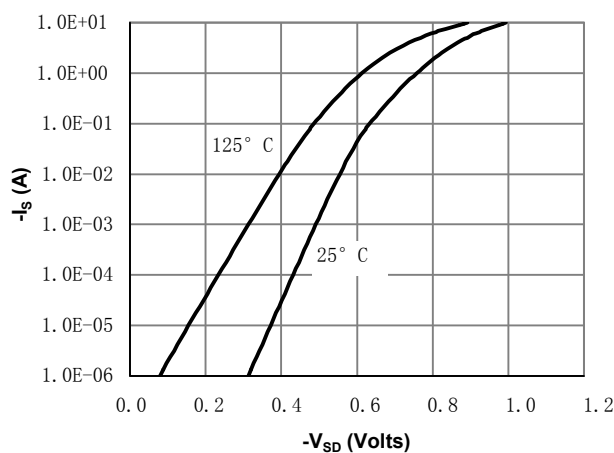


Figure 6: Body-Diode Characteristics

■ Typical Characteristics

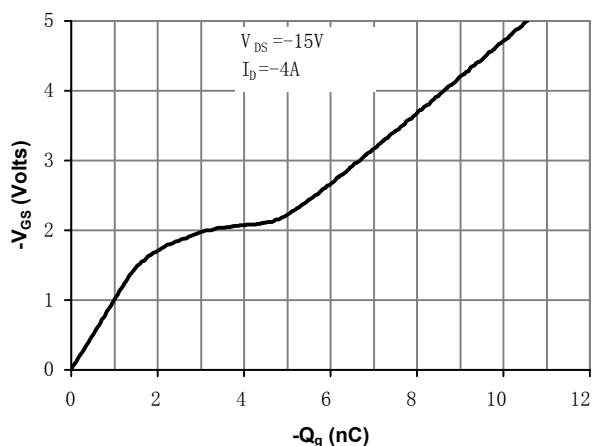


Figure 7: Gate-Charge Characteristics

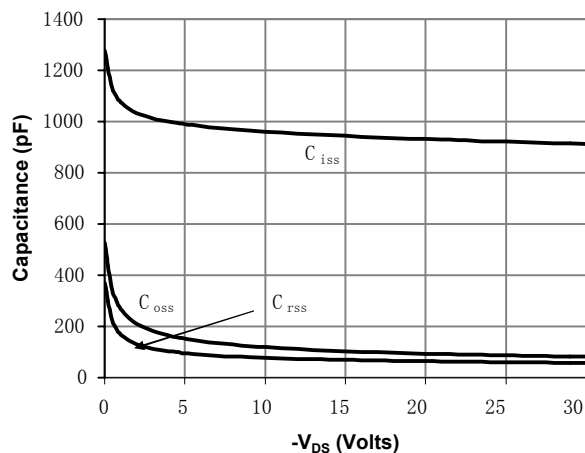


Figure 8: Capacitance Characteristics

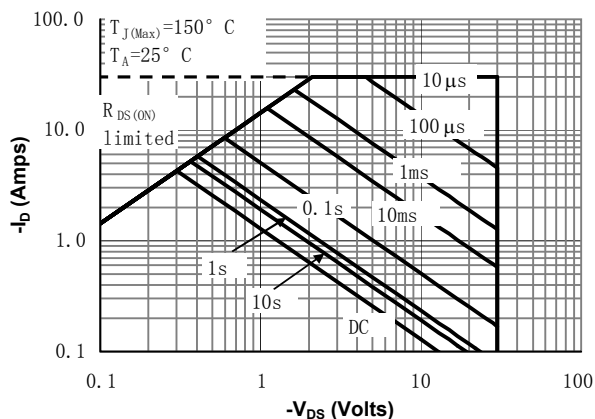


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

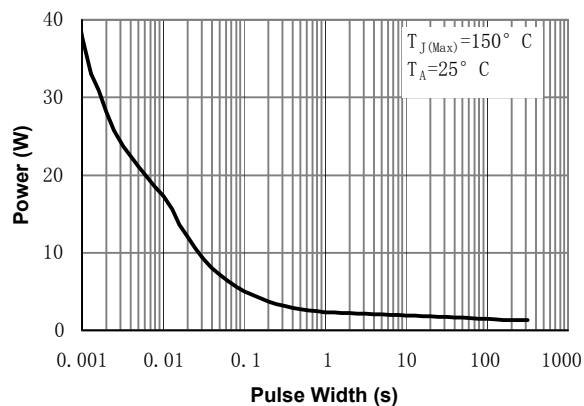


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

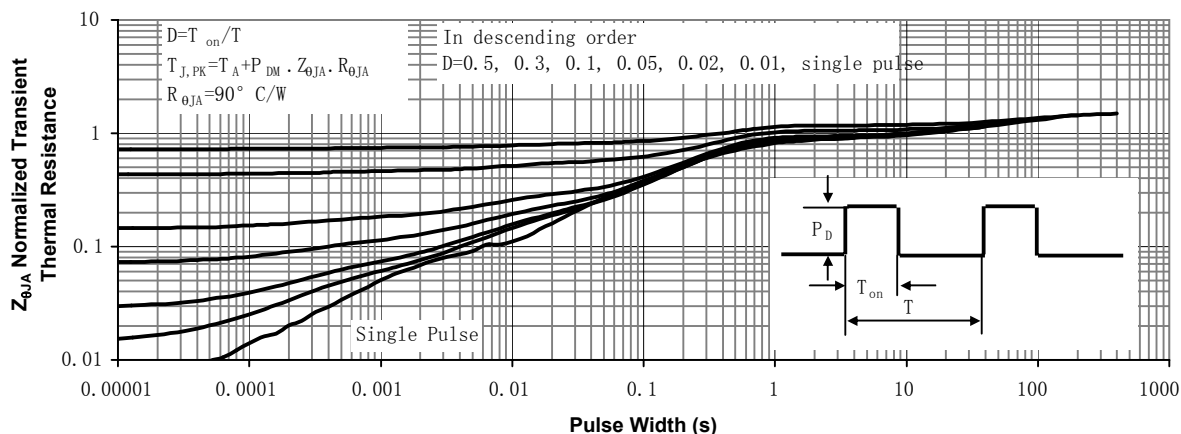
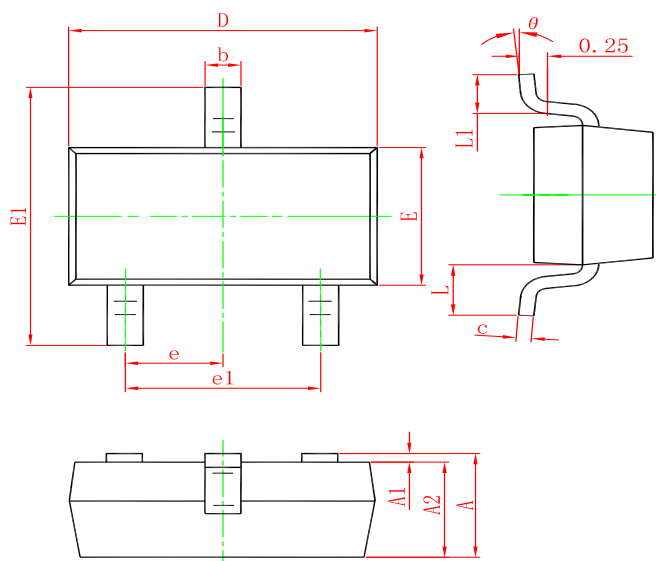


Figure 11: Normalized Maximum Transient Thermal Impedance

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°

Ordering information

Order code	Package	Baseqty	Deliverymode
UMW FDV304P	SOT-23	3000	Tape and reel