

1.Description

This N-Channel 2.5V specified MOSFET is produced using ON Semiconductor's advanced PowerTrench process that has been especially tailored to minimize the on-state resistance and yet maintain low gate charge for superior switching performance.

2.Features

- $V_{(BR)DSS}=20V$
- $I_D=1.7A$
- $R_{DS(ON)}<70m\Omega(V_{GS}=-4.5V)$
- $R_{DS(ON)}<100m\Omega(V_{GS}=2.5V)$

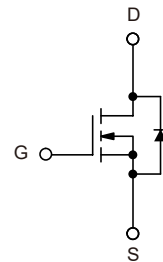
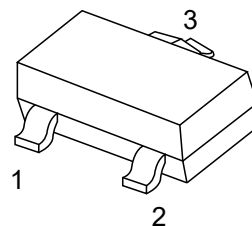
3.Application

- Battery protection
- Load switch
- Battery management

4.Pinning information

Pin	Symbol	Description
1	G	GATE
2	S	SOURCE
3	D	DRAIN

SOT-23



5.Maximum ratings ($T_A=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 8	V
Continuous Drain Current	I_D	1.7	A
Pulsed Drain Current (note 1)	I_{DM}	10	A
Power Dissipation	P_D	1	W
Thermal Resistance from Junction to Ambient ($t \leq 10s$)	$R_{\theta JA}$	250	$^{\circ}C/W$
Operating Junction	T_J	150	$^{\circ}C$
Storage Temperature	T_{STG}	-55~+150	$^{\circ}C$



6. $T_A=25^{\circ}\text{C}$ unless otherwise specified

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	20			V
Gate-source threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.4		1.5	V
Gate-source leakage	I_{GSS}	$V_{GS}=\pm 8V, V_{DS}=0V$			± 100	nA
Zero gate voltage drain current	I_{DSS}	$V_{DS}=16V, V_{GS}=0V$			1	μA
Drain-source on-state resistancea	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=1.7A$		55	70	m Ω
		$V_{GS}=2.5V, I_D=1.5A$		78	100	m Ω
Forward transconductance (note 3)	g_{FS}	$V_{DS}=4.5V, I_D=1.7A$		7		S
Diode forward voltage (note 3)	V_{SD}	$I_S=1A, V_{GS}=0V$		0.8	1.2	V
Dynamic						
Input Capacitance	C_{iss}	$V_{DS}=10V, V_{GS}=0V, f=1MHz$		310		pF
Output Capacitance	C_{oss}			80		pF
Reverse Transfer Capacitance	C_{rss}			40		pF
Total gate charge	Q_g	$V_{DS}=10V, V_{GS}=4.5V, I_D=1.7A$		3.5		nC
Gate-source charge	Q_{gs}			0.6		nC
Gate-drain charge	Q_{gd}			1		nC
Gate resistance	R_g	$f=1MHz$				Ω
Switchingbtr						
Turn-on delay time	$t_{D(on)}$	$V_{DS}=10V, R_L=3.5\Omega, I_D\approx 1A$ $V_{GEN}=4.5V, R_{GEN}=3\Omega$		5		ns
Rise time	t_r			8.5		ns
Turn-off delay time	$t_{D(off)}$			11		ns
Fall time	t_f			3		ns
Drain-source body diode characteristicstr						
Continuous Source-Drain Diode Current	I_S	$T_C=25^{\circ}C$				A
Pulsed Diode forward Curren	I_{SM}					A

1. Repetitive rating : Pulse width limited by junction temperature.

3. Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.2. Surface Mounted on FR4 Board, $t < 10$ sec

4. Guaranteed by design, not subject to production testing



7.1 Typical Characteristics

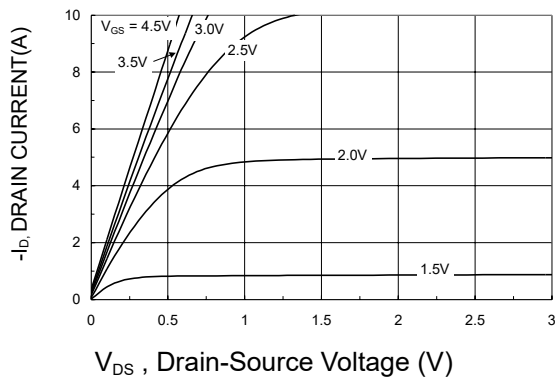


Figure 1: On-Region Characteristics.

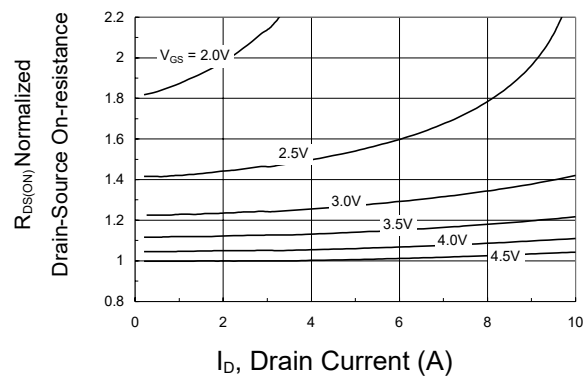


Figure 2: On-Resistance Variation with Drain Current and Gate Voltage.

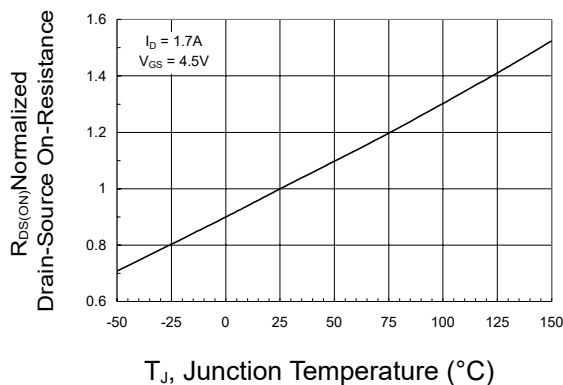


Figure 3: On-Resistance Variation with Temperature.

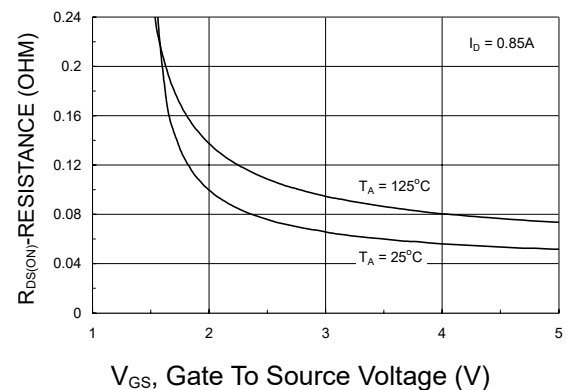


Figure 4: On-Resistance Variation with Gate-to-Source Voltage.

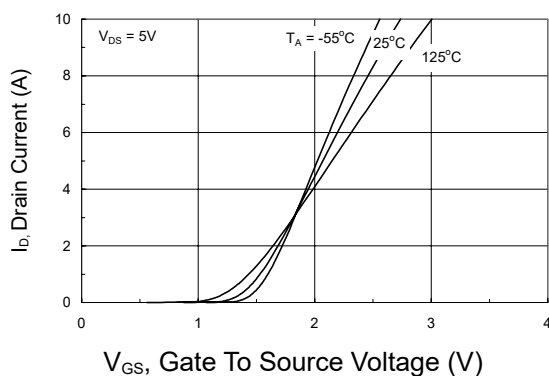


Figure 5: Transfer Characteristics.

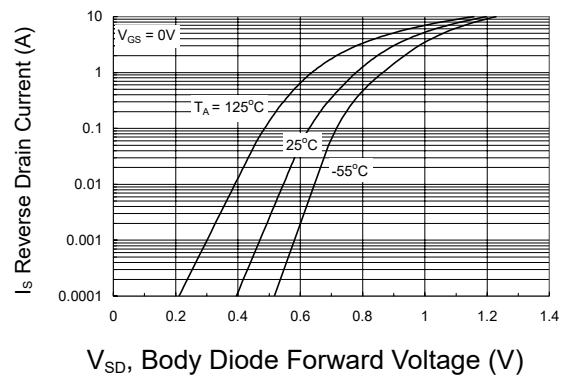


Figure 6: . Body Diode Forward Voltage Variation with Source Current and Temperature.



7.2 Typical Characteristics

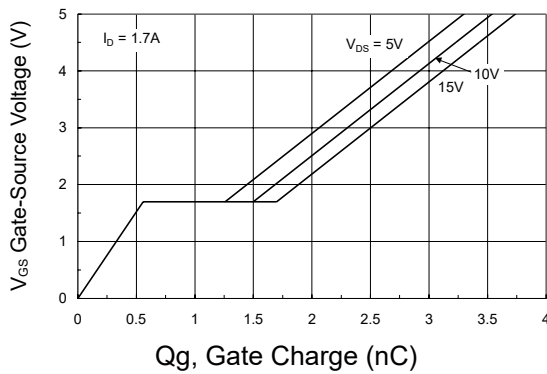


Figure 7: Gate-Charge Characteristics

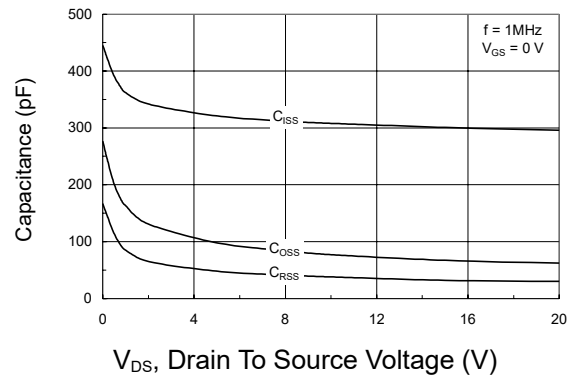


Figure 8: Capacitance Characteristics

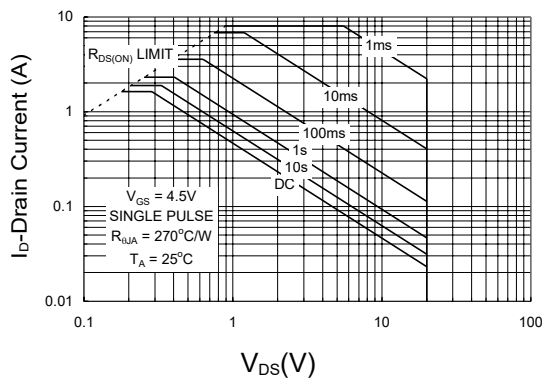


Figure 9: Maximum Safe Operating Area.

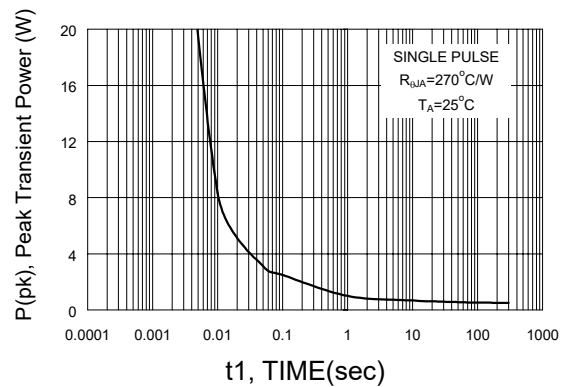


Figure 10: Single Pulse Maximum Power Dissipation.

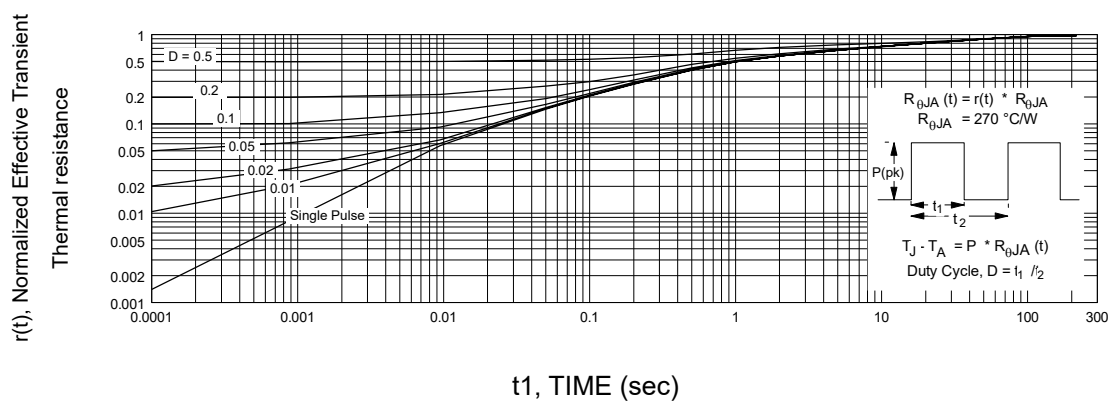
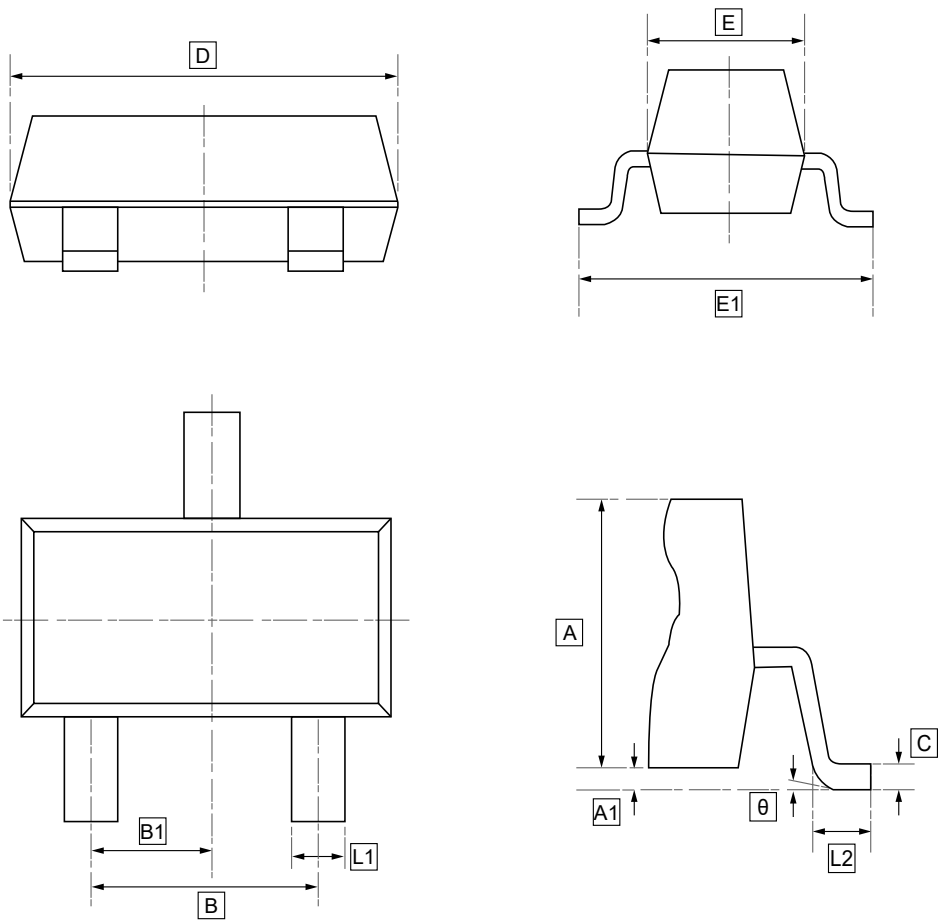


Figure 11. Transient Thermal Response Curve.



8.SOT-23 Package Outline Dimensions

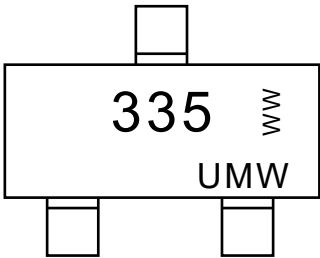


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	L1	L2	C	D	E	E1	B	B1	θ
Min	1.050	0.000	0.300	0.350	0.100	2.820	1.500	2.700	1.800	0.950	0°
Max	1.150	0.100	0.500	0.550	0.200	3.020	1.700	2.900	2.000	TYP	8°



9.Ordering information



WW: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW FDN335N	SOT-23	3000	Tape and reel



10.Disclaimer

UMW reserves the right to make changes to all products, specifications. Customers should obtain the latest version of product documentation and verify the completeness and currency of the information before placing an order.

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