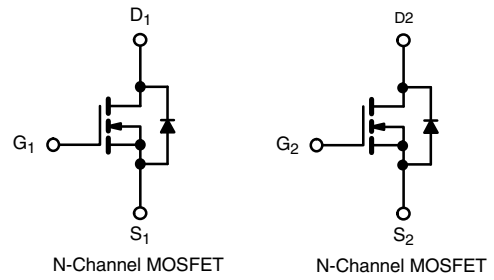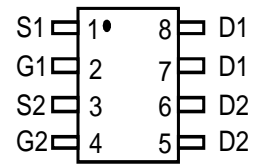## FEATURES

- $V_{DS (V)}$ = 60V
- I_D= 5.3A (V_{GS}=10V)
- $R_{DS(ON)} <$ 36mΩ (V_{GS} = 10V)
- $R_{DS(ON)} <$ 47mΩ (V_{GS} = 4.5V)

APPLICATIONS

- LCD TV CCFL inverter
- Load switch

N-Channel MOSFET   N-Channel MOSFET

S1	1	8	D1
G1	2	7	D1
S2	3	6	D2
G2	4	5	D2

SOP-8

ABSOLUTE MAXIMUM RATINGS   (T_A = 25 °C, unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNIT
Drain-source voltage		V_{DS}	60	V
Gate-source voltage		V_{GS}	± 20	
Continuous drain current (T_J = 150 °C)	T_C = 25 °C	I_D	5.3	A
	T_C = 70 °C		4.3	
	T_A = 25 °C		4.3 [b, c]	
	T_A = 70 °C		3.4 [b, c]	
Pulsed drain current (10 µs width)		I_{DM}	20	
Continuous source-drain diode current	T_C = 25 °C	I_S	2.6	
	T_A = 25 °C		1.7 [b, c]	
Avalanche current	L = 0 1 mH	I_{AS}	11	
Single-pulse avalanche energy		E_{AS}	6.1	mJ
Maximum power dissipation	T_C = 25 °C	P_D	3.1	W
	T_C = 70 °C		2	
	T_A = 25 °C		2 [b, c]	
	T_A = 70 °C		1.3 [b, c]	
Operating junction and storage temperature range		T_J, T_{stg}	-55 to +150	°C

THERMAL RESISTANCE RATINGS

PARAMETER		SYMBOL	TYPICAL	MAXIMUM	UNIT
Maximum junction-to-ambient [a, d]		R_{thJA}	55	62.5	°C/W
Maximum junction-to-foot (drain)	Steady state	R_{thJF}	33	40	

Notes
a. Based on T_C = 25 °C
b. Surface mounted on 1" x 1" FR4 board
c. t = 10 s
d. Maximum under steady state conditions is 110 °C/W

SPECIFICATIONS (T_J = 25 °C, unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Static						
Drain-source breakdown voltage	V_{DS}	V_{GS} = 0 V, I_D = 250 µA	60			V
V_{DS} temperature coefficient	$\Delta V_{DS}/T_J$	I_D = 250 µA		55		mV/°C
$V_{GS(th)}$ temperature coefficient	$\Delta V_{GS(th)}/T_J$			-6		
Gate-source threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 µA	1		3	V
		V_{DS} = V_{GS}, I_D = 5 mA		2.5		
Gate-source leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = 20 V			100	nA
Zero gate voltage drain current	I_{DSS}	V_{DS} = 60 V, V_{GS} = 0 V			1	µA
		V_{DS} = 60 V, V_{GS} = 0 V, T_J = 85 °C			10	
On-state drain current [a]	$I_{D(on)}$	$V_{DS} \geq$ 5 V, V_{GS} = 10 V	20			A
Drain-source on-state resistance [a]	$R_{DS(on)}$	V_{GS} = 10 V, I_D = 4.3 A		25	36	mΩ
		V_{GS} = 4.5 V, I_D = 3.9 A		32	47	
Forward transconductance [a]	g_{fs}	V_{DS} = 15 V, I_D = 4.3 A		15		S
Dynamic [b]						
Input capacitance	C_{iss}	V_{DS} = 15 V, V_{GS} = 0 V, f = 1 MHz		665		pF
Output capacitance	C_{oss}			75		
Reverse transfer capacitance	C_{rss}			40		
Total gate charge	Q_g	V_{DS} = 30 V, V_{GS} = 10 V, I_D = 4.3 A		13	20	nC
		V_{DS} = 30 V, V_{GS} = 4.5 V, I_D = 4.3 A		6	9	
Gate-source charge	Q_{gs}			2.3		
Gate-drain charge	Q_{gd}			2.6		
Gate resistance	R_g	f = 1 MHz		2		Ω
Turn-on delay time	$t_{d(on)}$	V_{DD} = 30 V, R_L = 8.8 Ω, $I_D \cong$ 3.4 A, V_{GEN} = 4.5 V, R_g = 1 Ω		15	25	ns
Rise time	t_r			65	100	
Turn-off delay time	$t_{d(off)}$			15	25	
Fall time	t_f			10	15	
Turn-on delay time	$t_{d(on)}$	V_{DD} = 30 V, R_L = 8.8 Ω, $I_D \cong$ 3.4 A, V_{GEN} = 10 V, R_g = 1 Ω		10	15	
Rise time	t_r			15	25	
Turn-off delay time	$t_{d(off)}$			20	30	
Fall time	t_f			10	15	
Drain-Source Body Diode Characteristics						
Continuous source-drain diode current	I_S	T_C = 25 °C			2.6	A
Pulse diode forward current	I_{SM}				20	
Body diode voltage	V_{SD}	I_S = 1.7 A, V_{GS} = 0 V		0.8	1.2	V
Body diode reverse recovery time	t_{rr}	I_F = 1.7 A, di/dt = 100 A/µs, T_J = 25 °C		30	60	ns
Body diode reverse recovery charge	Q_{rr}			32	50	nC
Reverse recovery fall time	t_a			25		ns
Reverse recovery rise time	t_b			5		

Notes

a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2 %
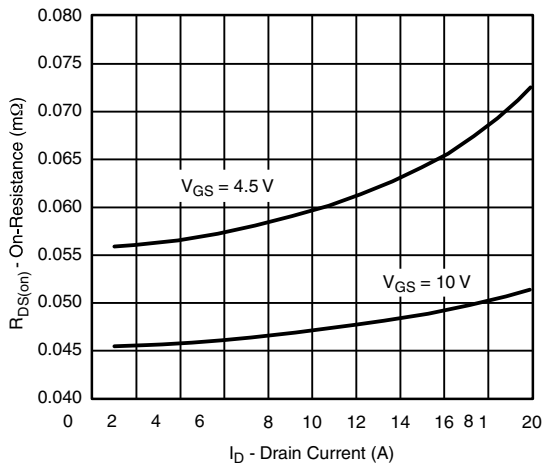b. Guaranteed by design, not subject to production testing

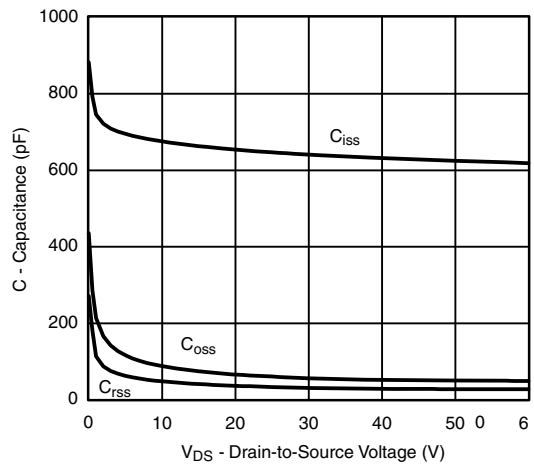**TYPICAL CHARACTERISTICS**   (25 °C, unless otherwise noted)
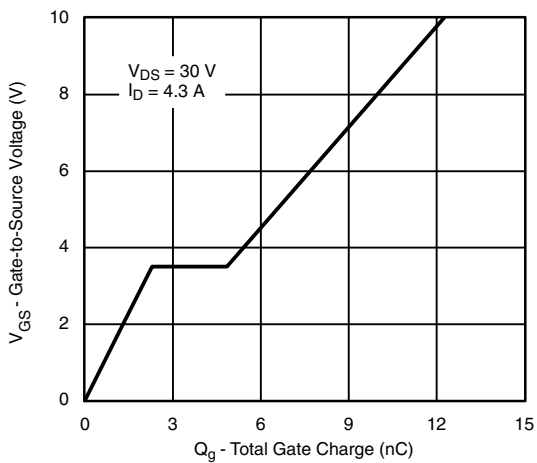
Output Characteristics
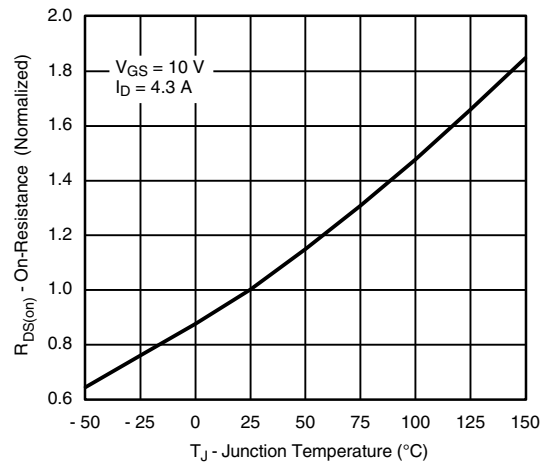
Transfer Characteristics

On-Resistance vs. Drain Current and Gate Voltage
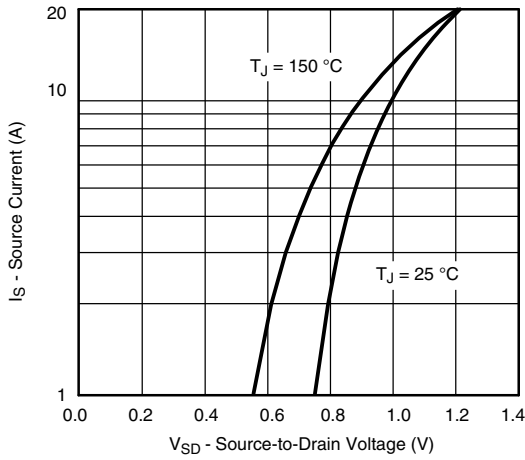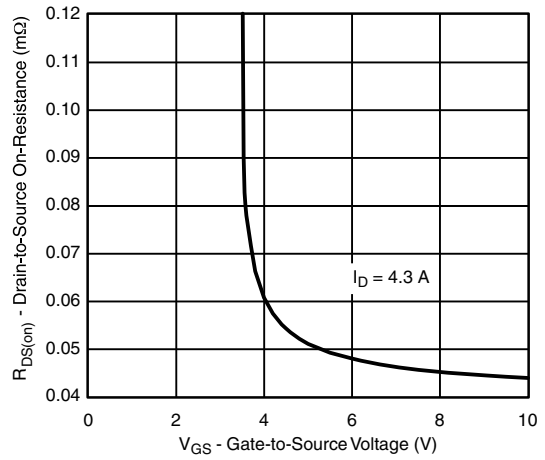
Capacitance

Gate Charge

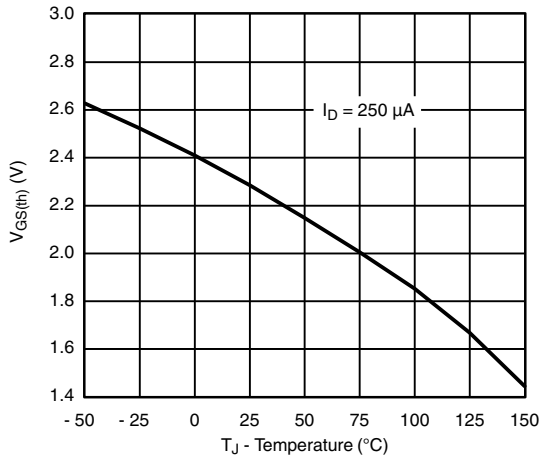On-Resistance vs. Junction Temperature

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)
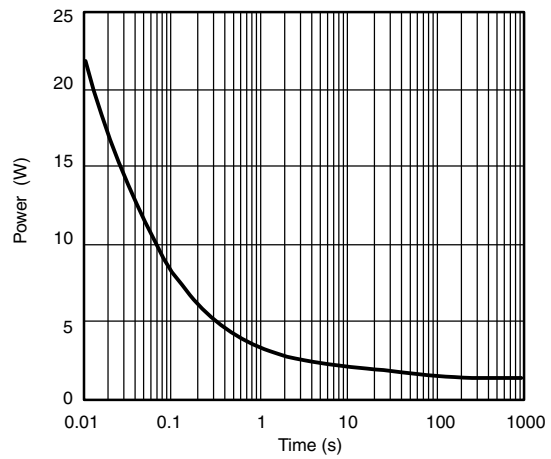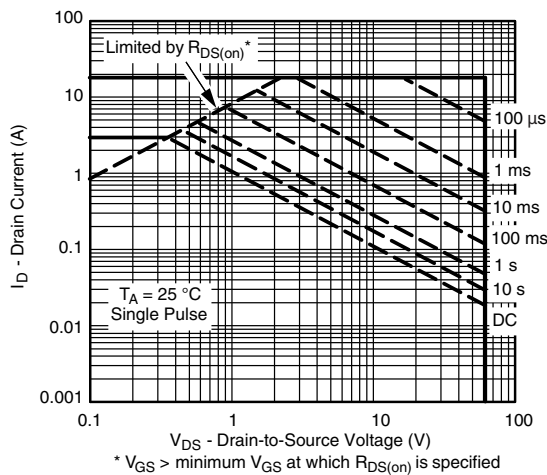

Source-Drain Diode Forward Voltage

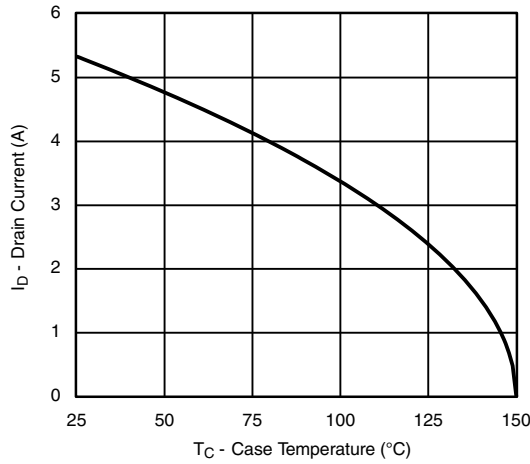**On-Resistance vs. Gate-to-Source Voltage**

Threshold Voltage

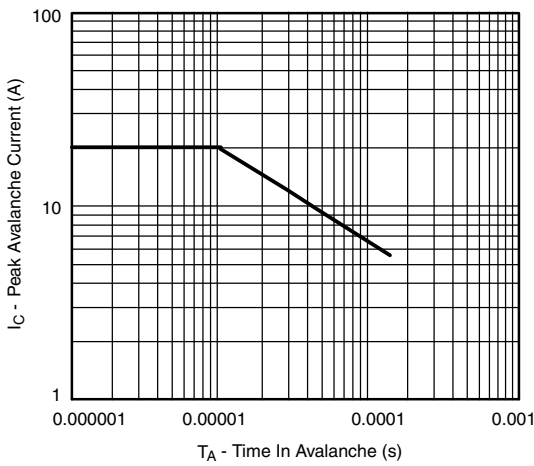**Single Pulse Power, Junction-to-Ambient**

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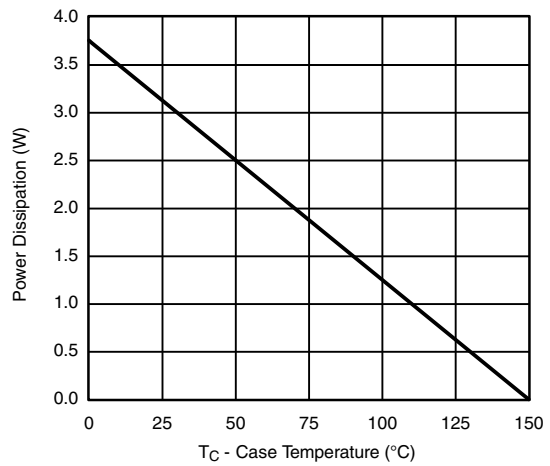
Safe Operating Area

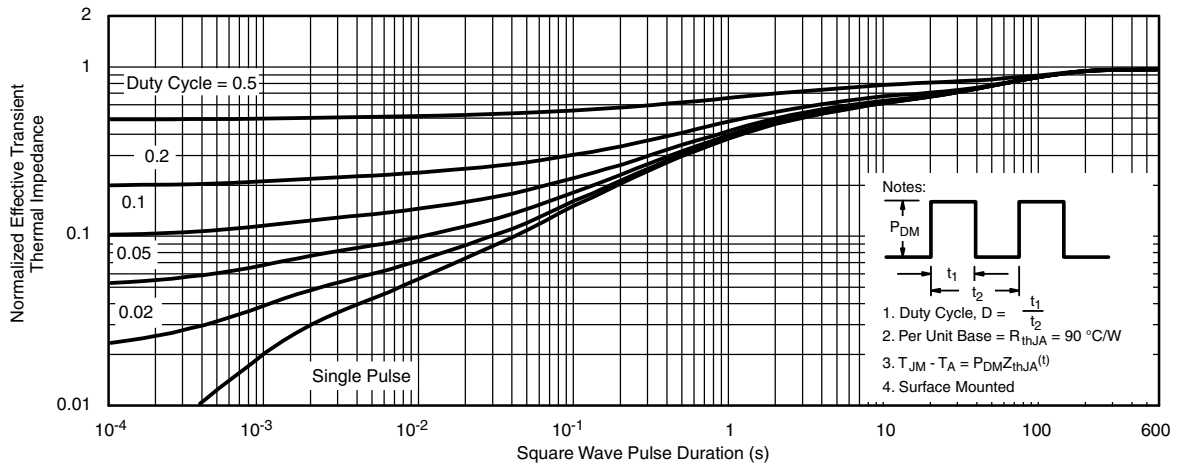**TYPICAL CHARACTERISTICS** (25 °C, unless otherwise noted)

Current Derating [a]

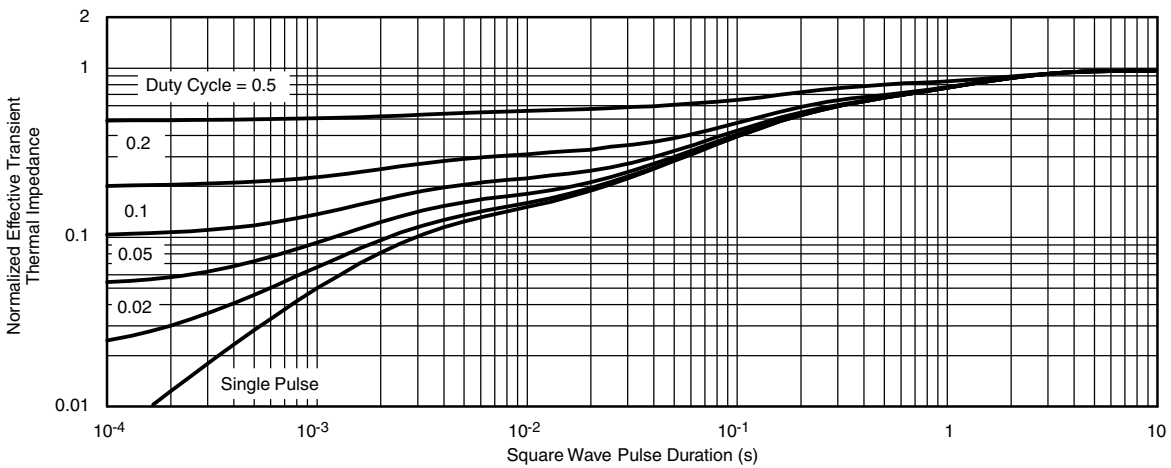**Single Pulse Avalanche Capability**

Power Derating

Note

a. The power dissipation P_D is based on T_J max. = 150 °C, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

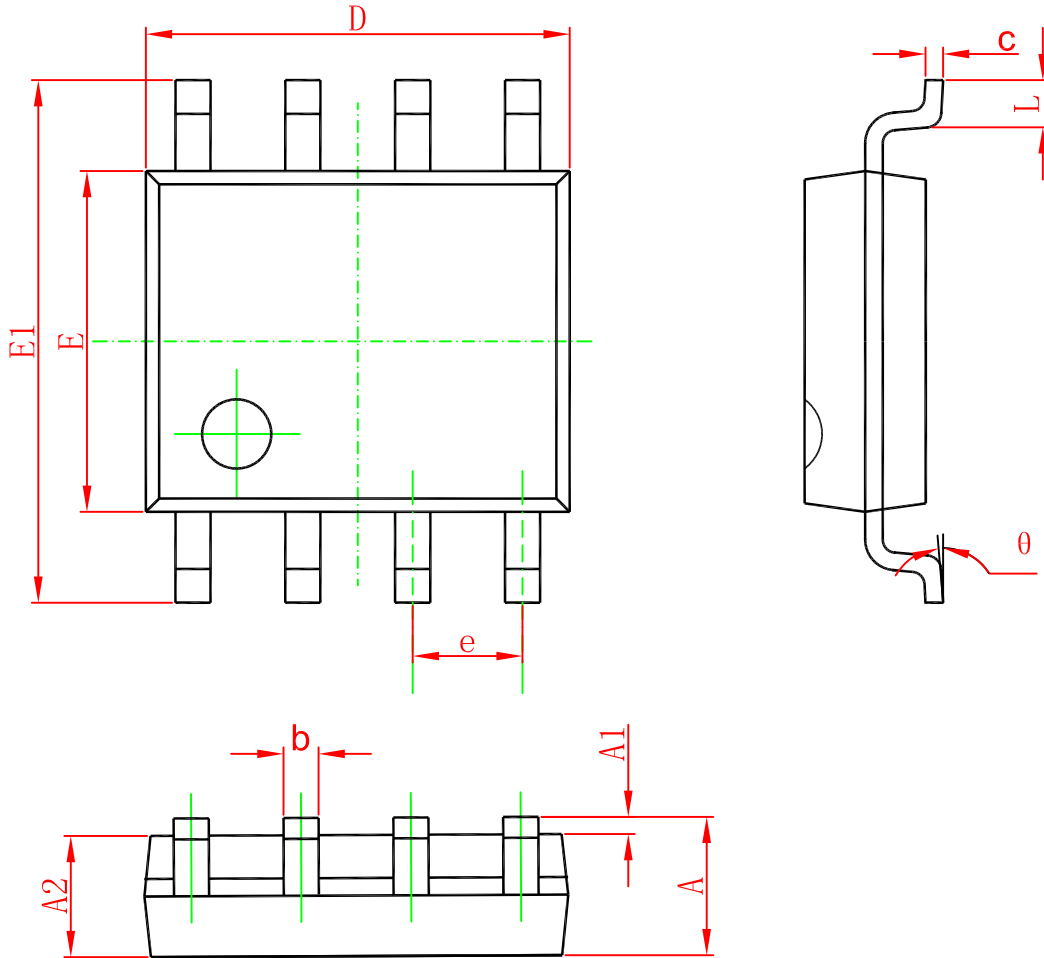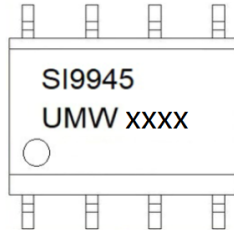**Normalized Thermal Transient Impedance, Junction-to-Ambient**

Notes:

1. Duty Cycle, D = $\frac{t_1}{t_2}$
2. Per Unit Base = R_{thJA} = 90 °C/W
3. $T_{JM} - T_A = P_{DM}Z_{thJA}^{(t)}$
4. Surface Mounted

Normalized Thermal Transient Impedance, Junction-to-Case

SOP-8

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

Marking

```
SI9945
UMW xxxx
○
```

Order code	Package	Baseqty	Deliverymode
UMW SI9945BDY	SOP-8	3000	Tape and reel

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for MOSFET *category:*

Click to view products by Youtai *manufacturer:*

Other Similar products are found below :

614233C 648584F MCH3443-TL-E MCH6422-TL-E FDPF9N50NZ NTNS3A92PZT5G IRFD120 IRFF430 JANTX2N5237 2N7000 AOD464 2SK2267(Q) 2SK2545(Q,T) 405094E 423220D MIC4420CM-TR VN1206L 614234A 715780A SSM6J414TU,LF(T 751625C IPS70R2K0CEAKMA1 BSF024N03LT3 G PSMN4R2-30MLD TK31J60W5,S1VQ(O 2SK2614(TE16L1,Q) DMN1017UCP3-7 EFC2J004NUZTDG FCAB21350L1 P85W28HP2F-7071 DMN1053UCP4-7 NTE2384 NTE2969 NTE6400A DMC2700UDMQ-7 DMN2080UCB4-7 DMN61D9UWQ-13 US6M2GTR DMN31D5UDJ-7 SSM6P54TU,LF DMP22D4UFO-7B IPS60R3K4CEAKMA1 DMN1006UCA6-7 DMN16M9UCA6-7 STF5N65M6 IRF40H233XTMA1 IPSA70R950CEAKMA1 IPSA70R2K0CEAKMA1 STU5N65M6 C3M0021120D