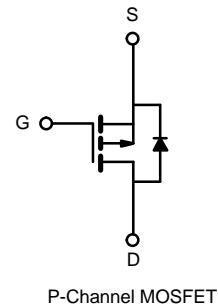
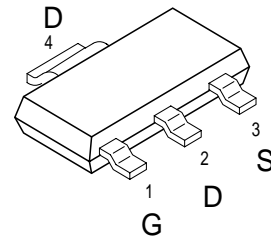


Features

- $V_{DS} (V) = -60V$
- $I_D = -7A (V_{GS} = -10V)$
 $I_D = -6A (V_{GS} = -4.5V)$
- $R_{DS(ON)} < 55m\Omega (V_{GS} = -10V)$
- $R_{DS(ON)} < 65m\Omega (V_{GS} = -4.5V)$



ABSOLUTE MAXIMUM RATINGS ($T_A = 25\text{ }^\circ\text{C}$, unless otherwise noted)			
Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	- 60	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ($T_J = 150\text{ }^\circ\text{C}$)	$T_C = 25\text{ }^\circ\text{C}$	- 7.0 ^a	A
	$T_C = 70\text{ }^\circ\text{C}$	- 5.2	
	$T_A = 25\text{ }^\circ\text{C}$	- 4.8 ^b	
	$T_A = 70\text{ }^\circ\text{C}$	- 4.1 ^b	
Pulsed Drain Current	I_{DM}	- 25	
Avalanche Current Pulse	I_{AS}	- 4.5	
Single Pulse Avalanche Energy	E_{AS}	10.1	mJ
Continuous Source-Drain Diode Current	$T_C = 25\text{ }^\circ\text{C}$	6.9 ^a	A
	$T_A = 25\text{ }^\circ\text{C}$	3.5 ^b	
Maximum Power Dissipation	$T_C = 25\text{ }^\circ\text{C}$	10.4 ^a	W
	$T_C = 70\text{ }^\circ\text{C}$	6.6 ^a	
	$T_A = 25\text{ }^\circ\text{C}$	2.1 ^b	
	$T_A = 70\text{ }^\circ\text{C}$	1.1 ^b	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	- 55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^b	Steady State	R_{thJA}	33	40	$^\circ\text{C/W}$
	Maximum Junction-to-Case	R_{thJC}	0.98	1.2	

Notes:

a. Based on $T_C = 25\text{ }^\circ\text{C}$.

b. Surface mounted on 1" x 1" FR4 board.

SPECIFICATIONS ($T_J = 25\text{ }^\circ\text{C}$, unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V_{DS}	$V_{GS} = 0\text{ V}, I_D = -250\text{ }\mu\text{A}$	-60			V
V_{DS} Temperature Coefficient	$\Delta V_{DS}/T_J$	$I_D = -250\text{ }\mu\text{A}$		68		mV/ $^\circ\text{C}$
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}/T_J$			-5.2		
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\text{ }\mu\text{A}$	-1.0		-2.5	V
Gate-Source Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -60\text{ V}, V_{GS} = 0\text{ V}$			-1	μA
		$V_{DS} = -60\text{ V}, V_{GS} = 0\text{ V}, T_J = 55\text{ }^\circ\text{C}$			-10	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} = -5\text{ V}, V_{GS} = -10\text{ V}$	-25			A
Drain-Source On-State Resistance ^a	$R_{DS(on)}$	$V_{GS} = -10\text{ V}, I_D = -3\text{ A}$		55		m Ω
		$V_{GS} = -4.5\text{ V}, I_D = -2\text{ A}$		65		
Forward Transconductance ^a	g_{fs}	$V_{DS} = -15\text{ V}, I_D = -5\text{ A}$	20			S
Dynamic^b						
Input Capacitance	C_{iss}	$V_{DS} = -25\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$		1500		pF
Output Capacitance	C_{oss}			200		
Reverse Transfer Capacitance	C_{rss}			150		
Total Gate Charge	Q_g	$V_{DS} = -30\text{ V}, V_{GS} = -10\text{ V}, I_D = -5\text{ A}$		38	56	nC
				19	30	
Gate-Source Charge	Q_{gs}	$V_{DS} = -30\text{ V}, V_{GS} = -4.5\text{ V}, I_D = -5\text{ A}$		9		
Gate-Drain Charge	Q_{gd}			10		
Gate Resistance	R_g	$f = 1\text{ MHz}$		5.2		Ω
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -2\text{ V}, R_L = 2\text{ }\Omega$ $I_D = -5\text{ A}, V_{GEN} = -10\text{ V}, R_g = 1\text{ }\Omega$		10	15	ns
Rise Time	t_r			7	15	
Turn-Off Delay Time	$t_{d(off)}$			70	110	
Fall Time	t_f			40	60	
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I_S	$T_C = 25\text{ }^\circ\text{C}$			-6.9	A
Pulse Diode Forward Current ^a	I_{SM}				-15	
Body Diode Voltage	V_{SD}	$I_S = -3\text{ A}$		-1	-1.5	V
Body Diode Reverse Recovery Time	t_{rr}	$I_F = -5\text{ A}, di/dt = 10\text{ A}/\mu\text{s}, T_J = 25\text{ }^\circ\text{C}$		45	68	ns
Body Diode Reverse Recovery Charge	Q_{rr}			59	120	nC
Reverse Recovery Fall Time	t_a			29		ns
Reverse Recovery Rise Time	t_b			16		

Notes:

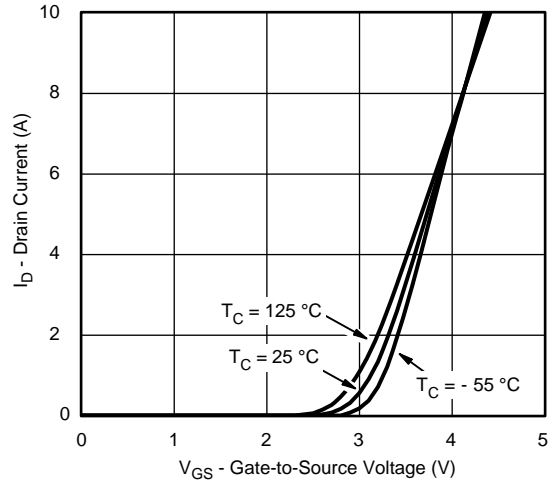
- a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
- b. Guaranteed by design, not subject to production testing.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



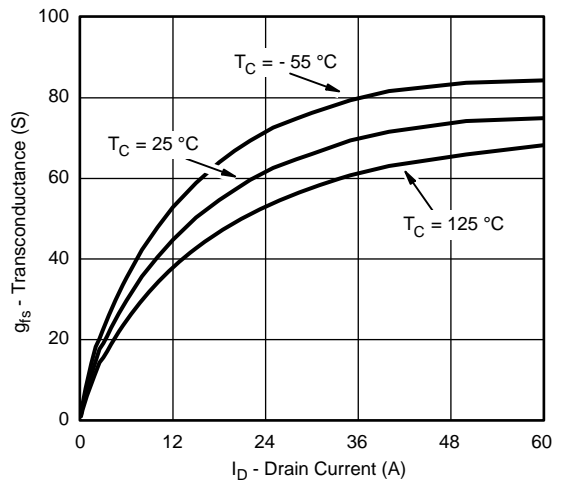
Output Characteristics



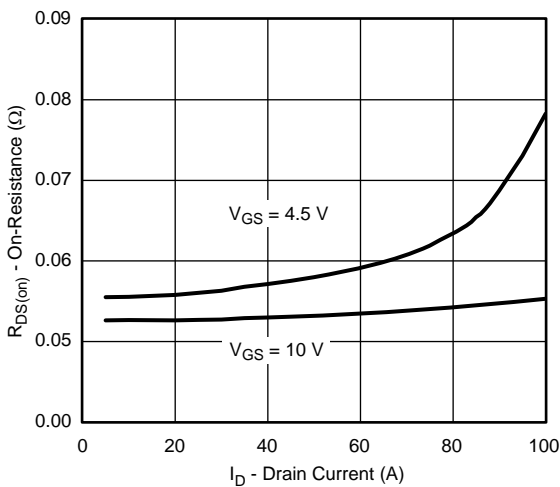
Transfer Characteristics



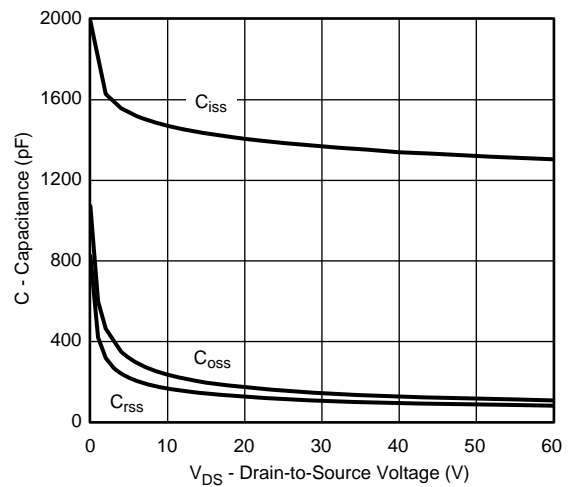
Transfer Characteristics



Transconductance

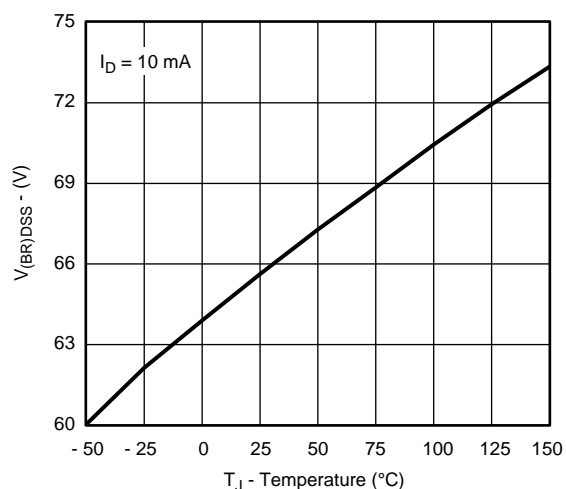
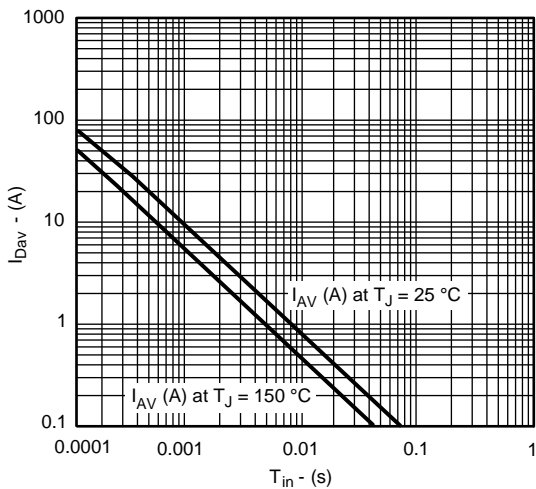
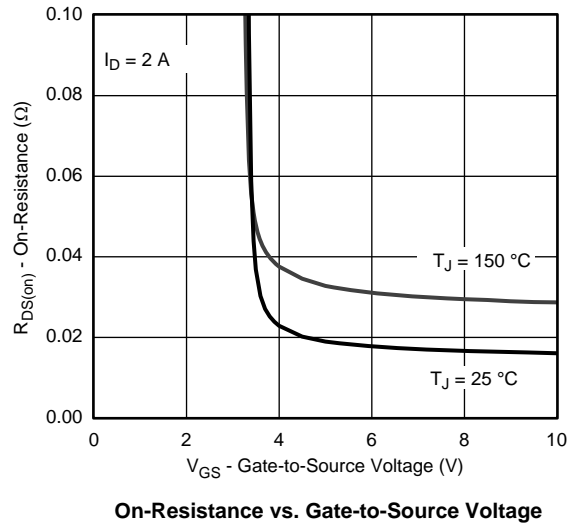
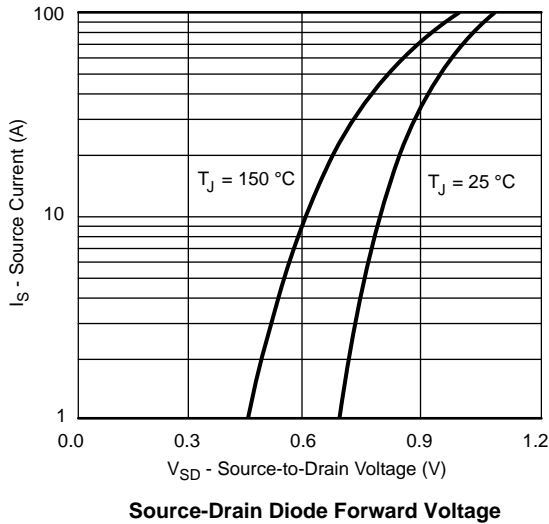
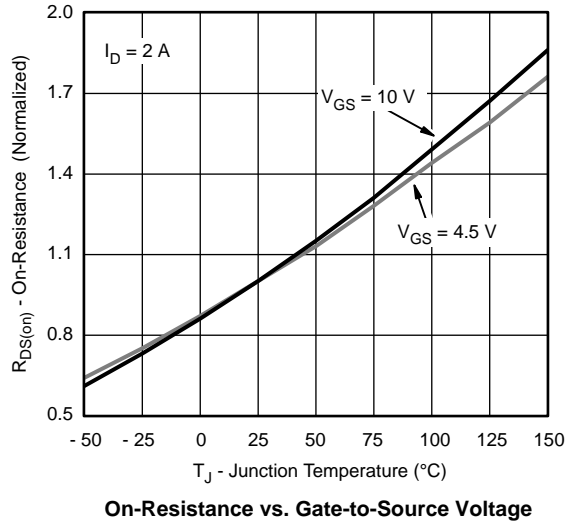
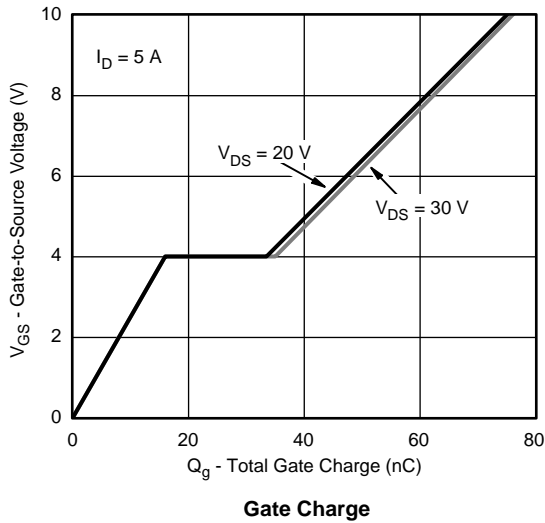


On-Resistance vs. Drain Current



Capacitance

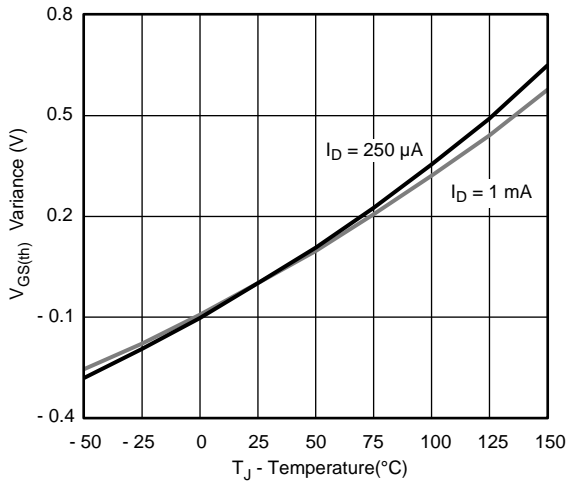
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



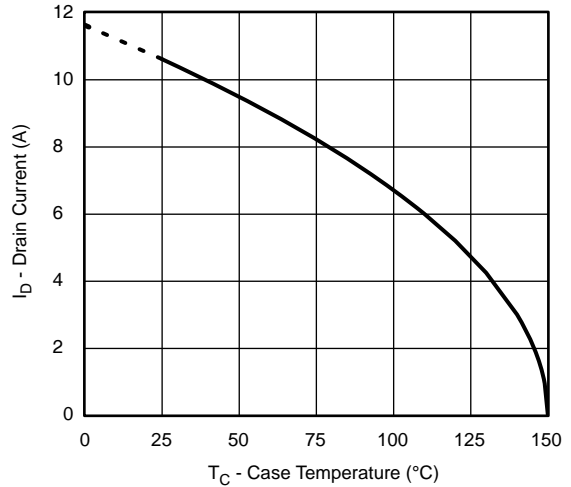
Single Pulse Avalanche Current Capability vs. Time

Drain-Source Breakdown Voltage vs. Junction Temperature

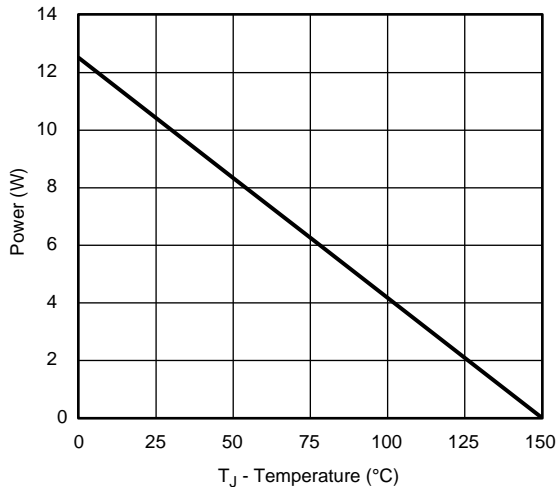
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



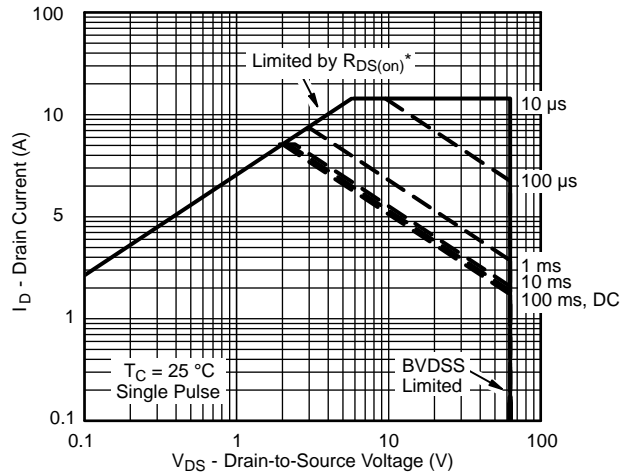
Threshold Voltage



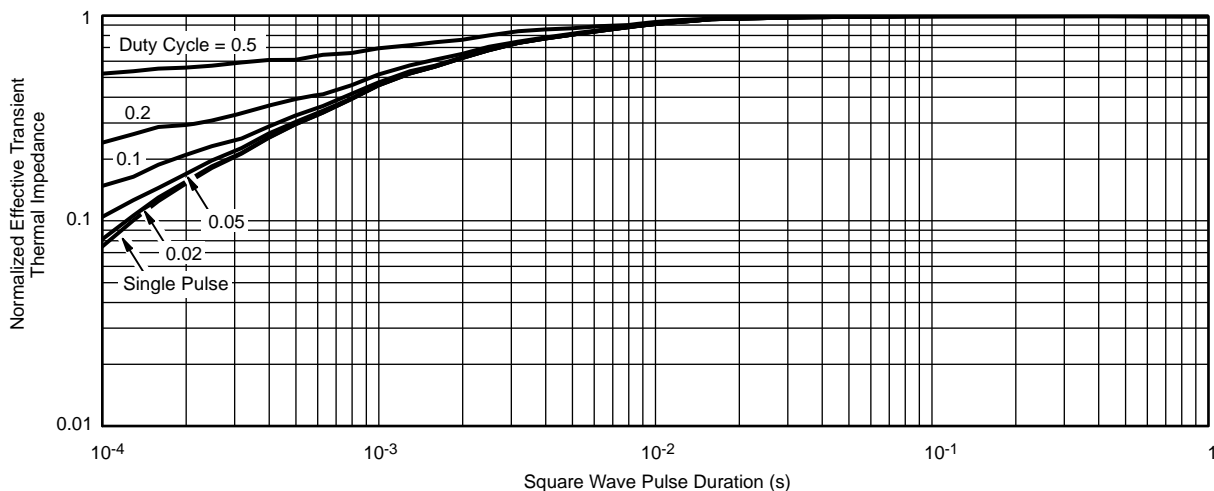
Max. Drain Current vs. Case Temperature



Power Derating, Junction-to-Case

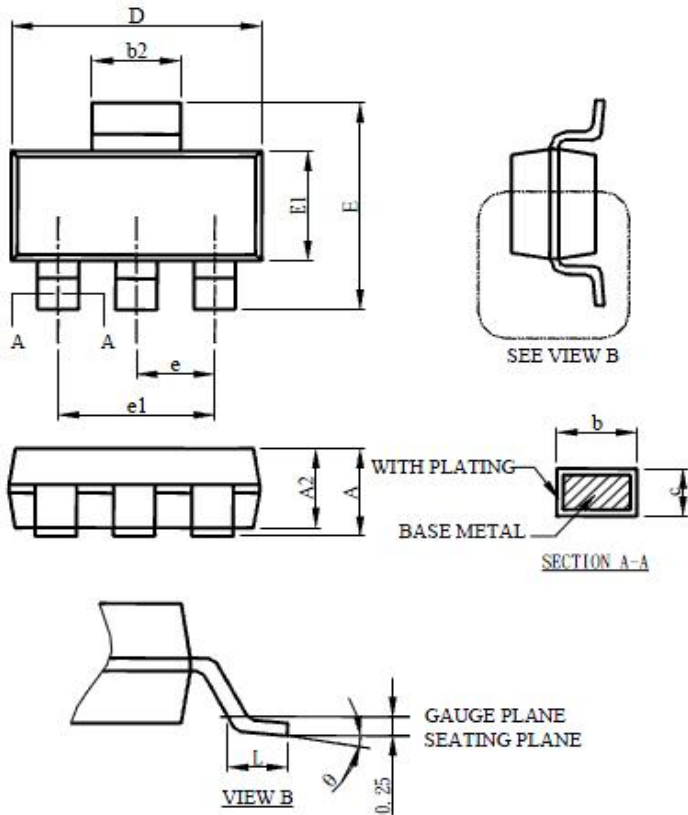


Safe Operating Area, Junction-to-Case



Normalized Thermal Transient Impedance, Junction-to-Case

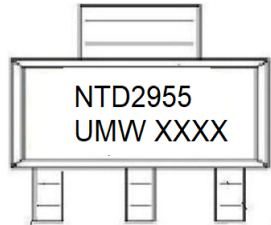
Package Mechanical Data SOT-223



SYMBOL	SOT-223	
	MILLIMETERS	
	MIN.	MAX.
A		1.80
A1	0.02	0.10
A2	1.55	1.65
b	0.68	0.84
b2	2.90	3.10
c	0.23	0.33
D	6.30	6.70
E	6.70	7.30
E1	3.30	3.70
e	2.30 BSC	
e1	4.60 BSC	
L	0.90	
θ	0°	8°

- Note:
1. Refer to JEDEC TO-261AA.
 2. Dimension D and E1 are determined at the outermost extremes of the plastic body exclusive of mold flash, tie bar burrs, gate burrs, and interlead flash, but including any mismatch between the top and bottom of the plastic body.
 3. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.

Marking



Ordering information

Order code	Package	Baseqty	Deliverymode
UMW NTF2955T1G	SOT-223	2500	Tape and reel