

### PRODUCT SUMMARY

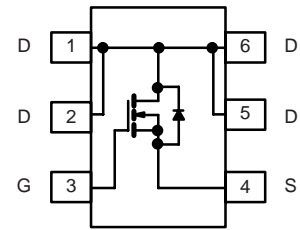
- $V_{DS} (V) = 30V$
- $I_D = 6 A$
- $R_{DS(ON)} < 38m\Omega$  ( $V_{GS} = 10V$ )
- $R_{DS(ON)} < 50m\Omega$  ( $V_{GS} = 4.5V$ )

### FEATURES

- Low On-Resistance

### APPLICATIONS

- DC/DC Converters, High Speed Switching



SOT23-6

### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25\text{ }^\circ\text{C}$ , unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	
Continuous Drain Current ( $T_J = 150\text{ }^\circ\text{C}$ )	$I_D$	$T_C = 25\text{ }^\circ\text{C}$	$6^e$
		$T_C = 70\text{ }^\circ\text{C}$	$6^e$
		$T_A = 25\text{ }^\circ\text{C}$	$5.5^{b, c}$
		$T_A = 70\text{ }^\circ\text{C}$	$4.4^{b, c}$
Pulsed Drain Current ( $t = 300\text{ }\mu\text{s}$ )	$I_{DM}$	25	
Continuous Source-Drain Diode Current	$I_S$	$T_C = 25\text{ }^\circ\text{C}$	2.1
		$T_A = 25\text{ }^\circ\text{C}$	$1.1^{b, c}$
Maximum Power Dissipation	$P_D$	$T_C = 25\text{ }^\circ\text{C}$	2.5
		$T_C = 70\text{ }^\circ\text{C}$	1.6
		$T_A = 25\text{ }^\circ\text{C}$	$1.3^{b, c}$
		$T_A = 70\text{ }^\circ\text{C}$	$0.8^{b, c}$
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	- 55 to 150	$^\circ\text{C}$
Soldering Recommendations (Peak Temperature)		260	

### THERMAL RESISTANCE RATINGS

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient <sup>b, d</sup>	$R_{thJA}$	75	100	$^\circ\text{C/W}$
Maximum Junction-to-Foot (Drain)	$R_{thJF}$	40	50	

#### Notes:

- a. Based on  $T_C = 25\text{ }^\circ\text{C}$ .
- b. Surface mounted on 1" x 1" FR4 board.
- c.  $t = 5\text{ s}$ .
- d. Maximum under steady state conditions is  $166\text{ }^\circ\text{C/W}$ .
- e. Package limited.

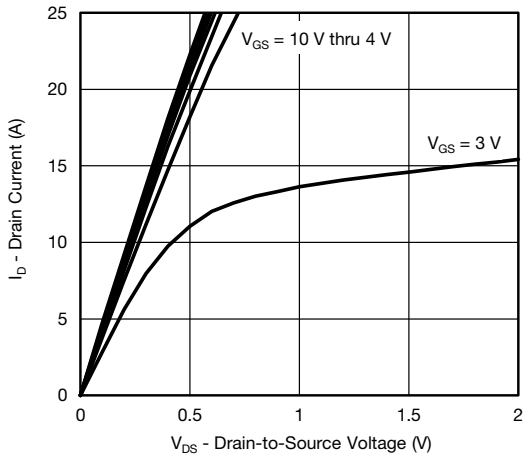
**SPECIFICATIONS** ( $T_J = 25\text{ }^\circ\text{C}$ , unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{DS}$	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	30			V
$V_{DS}$ Temperature Coefficient	$\Delta V_{DS}/T_J$	$I_D = 250\text{ }\mu\text{A}$		30		mV/ $^\circ\text{C}$
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}/T_J$		- 4.8			
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	0.7		1.5	V
Gate-Source Leakage	$I_{GSS}$	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}$			1	$\mu\text{A}$
		$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}, T_J = 70\text{ }^\circ\text{C}$			10	
On-State Drain Current <sup>a</sup>	$I_{D(on)}$	$V_{DS} \leq 5\text{ V}, V_{GS} = 10\text{ V}$	20			A
Drain-Source On-State Resistance <sup>a</sup>	$R_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 5.5\text{ A}$		26	30	m $\Omega$
		$V_{GS} = 4.5\text{ V}, I_D = 5\text{ A}$		28	40	
Forward Transconductance <sup>a</sup>	$g_{fs}$	$V_{DS} = 15\text{ V}, I_D = 5.5\text{ A}$		24		S
<b>Dynamic<sup>b</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS} = 15\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$		424		$\mu\text{F}$
Output Capacitance	$C_{oss}$		100			
Reverse Transfer Capacitance	$C_{riss}$		42			
Total Gate Charge	$Q_g$	$V_{DS} = 15\text{ V}, V_{GS} = 10\text{ V}, I_D = 5.5\text{ A}$		8.2	13	nC
				4.2	7	
Gate-Source Charge	$Q_{gs}$	$V_{DS} = 15\text{ V}, V_{GS} = 4.5\text{ V}, I_D = 5.5\text{ A}$		1.4		
Gate-Drain Charge	$Q_{gd}$			1.4		
Gate Resistance	$R_g$	$f = 1\text{ MHz}$	2.5	12.6	25.2	$\Omega$
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 15\text{ V}, R_L = 3.4\text{ }\Omega$ $I_D \approx 4.4\text{ A}, V_{GEN} = 4.5\text{ V}, R_g = 1\text{ }\Omega$		6	12	ns
Rise Time	$t_r$		20	30		
Turn-Off Delay Time	$t_{d(off)}$		14	21		
Fall Time	$t_f$		10	20		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 15\text{ V}, R_L = 3.4\text{ }\Omega$ $I_D \approx 4.4\text{ A}, V_{GEN} = 10\text{ V}, R_g = 1\text{ }\Omega$		3	6	
Rise Time	$t_r$		11	20		
Turn-Off Delay Time	$t_{d(off)}$		20	30		
Fall Time	$t_f$		7	14		
<b>Drain-Source Body Diode Characteristics</b>						
Continuous Source-Drain Diode Current	$I_S$	$T_C = 25\text{ }^\circ\text{C}$			2.1	A
Pulse Diode Forward Current	$I_{SM}$				25	
Body Diode Voltage	$V_{SD}$	$I_S = 4.4\text{ A}, V_{GS} = 0\text{ V}$		0.82	1.2	V
Body Diode Reverse Recovery Time	$t_{rr}$	$I_F = 4.4\text{ A}, di/dt = 100\text{ A}/\mu\text{s}, T_J = 25\text{ }^\circ\text{C}$		13	20	ns
Body Diode Reverse Recovery Charge	$Q_{rr}$		6	12	nC	
Reverse Recovery Fall Time	$t_a$		8		ns	
Reverse Recovery Rise Time	$t_b$		5			

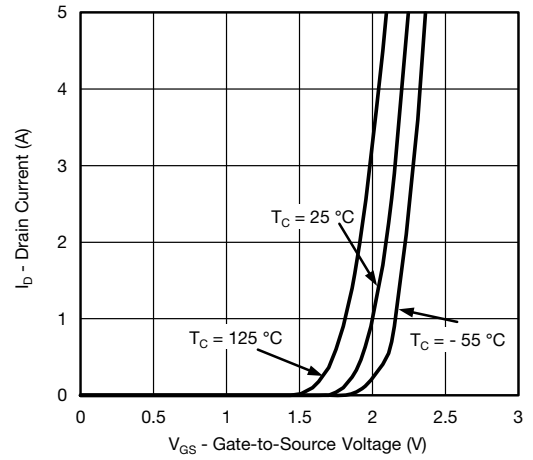
Notes:

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

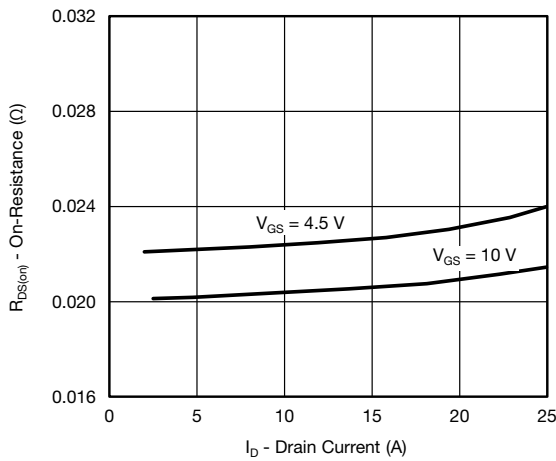
**TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)**



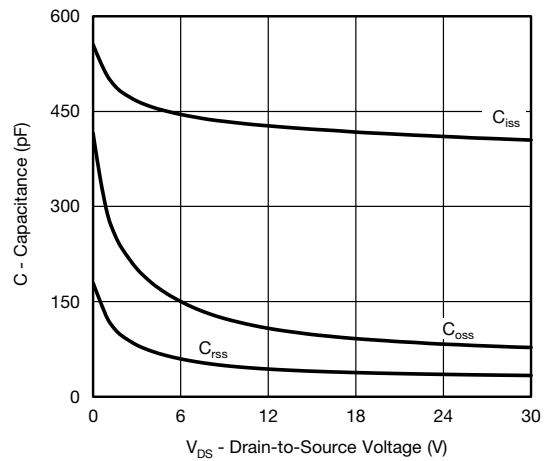
**Output Characteristics**



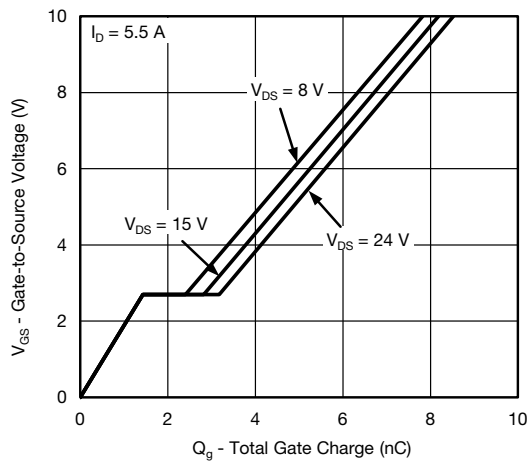
**Transfer Characteristics**



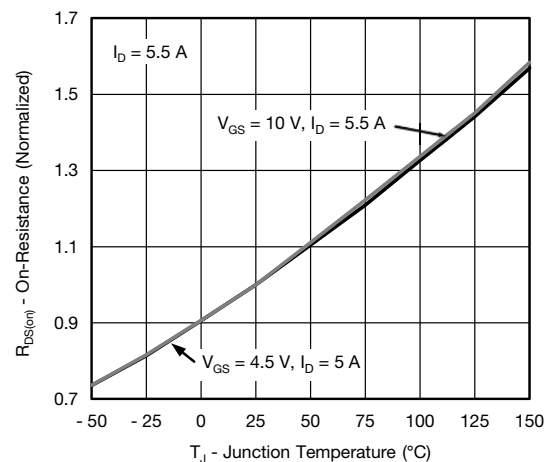
**On-Resistance vs. Drain Current and Gate Voltage**



**Capacitance**

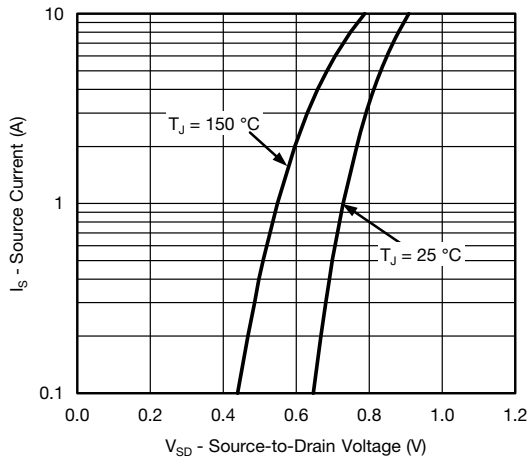


**Gate Charge**

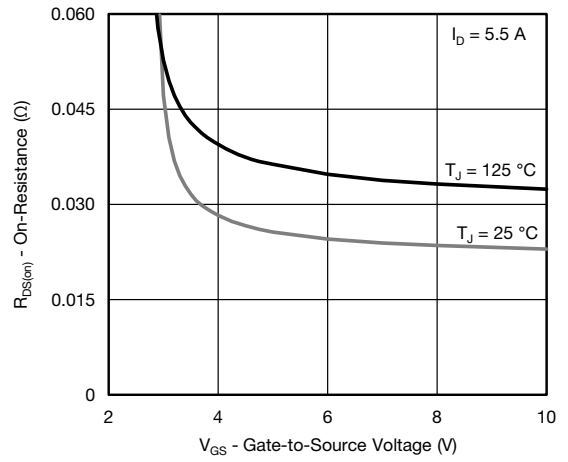


**On-Resistance vs. Junction Temperature**

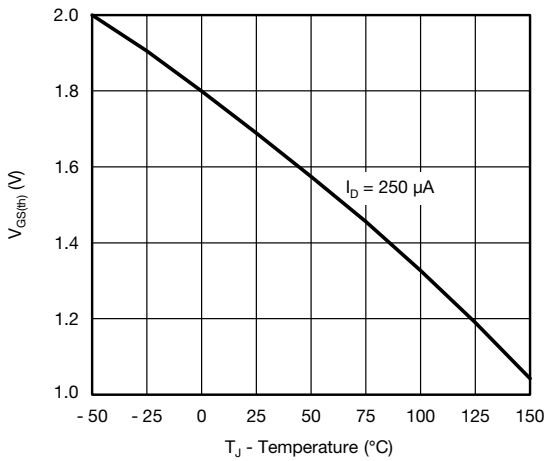
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



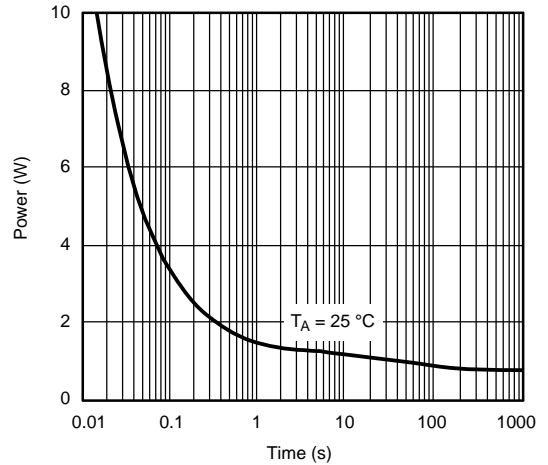
Source-Drain Diode Forward Voltage



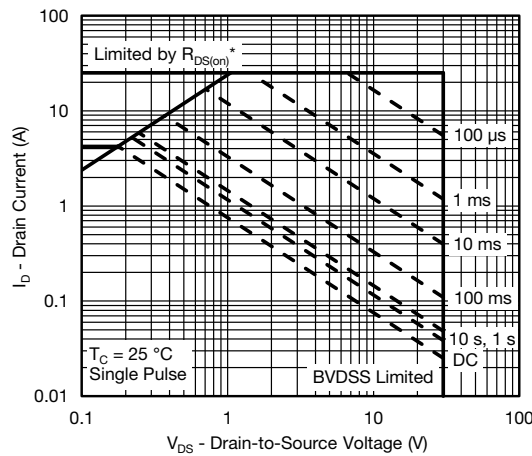
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

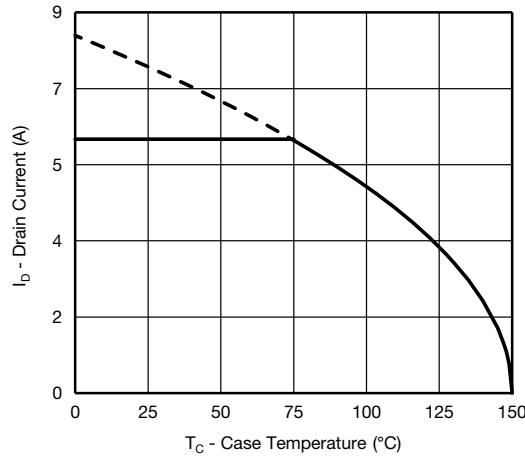


Single Pulse Power (Junction-to-Ambient)

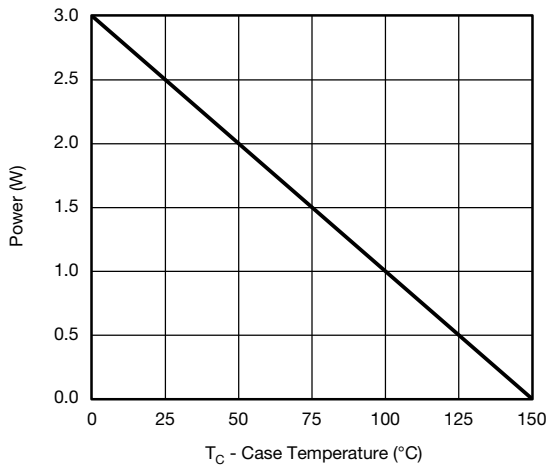


Safe Operating Area, Junction-to-Ambient

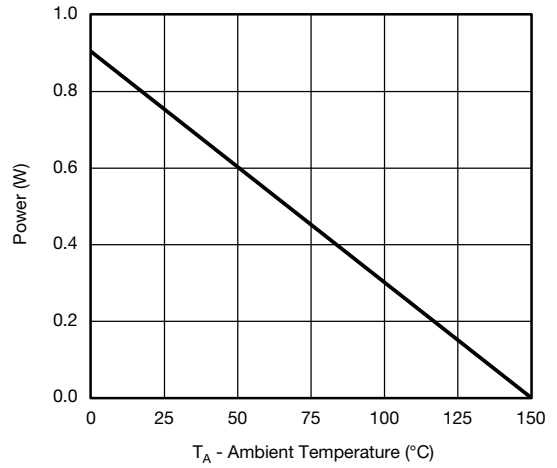
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Current Derating\*



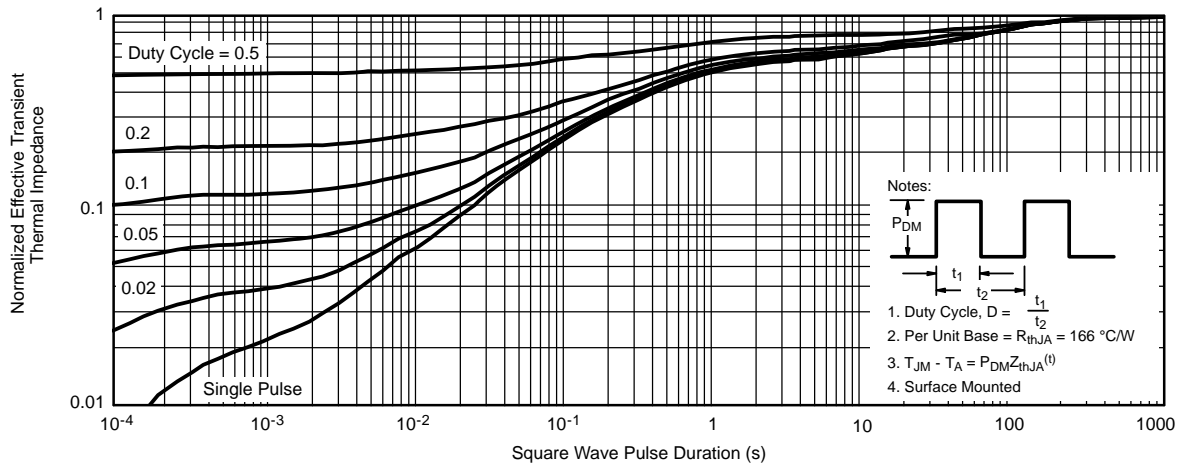
Power Derating, Junction-to-Foot



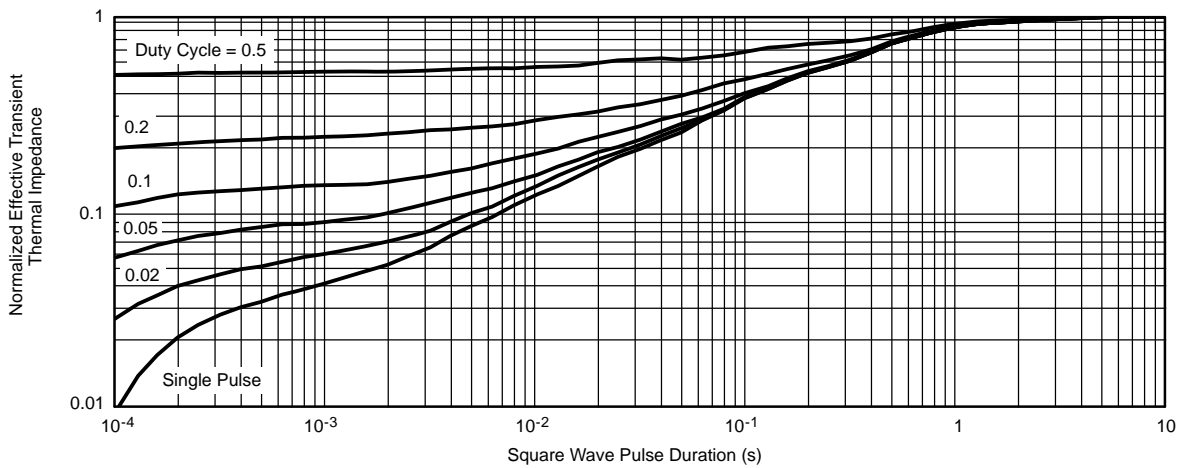
Power Derating, Junction-to-Ambient

\* The power dissipation  $P_D$  is based on  $T_{J(max.)} = 150\text{ °C}$ , 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)

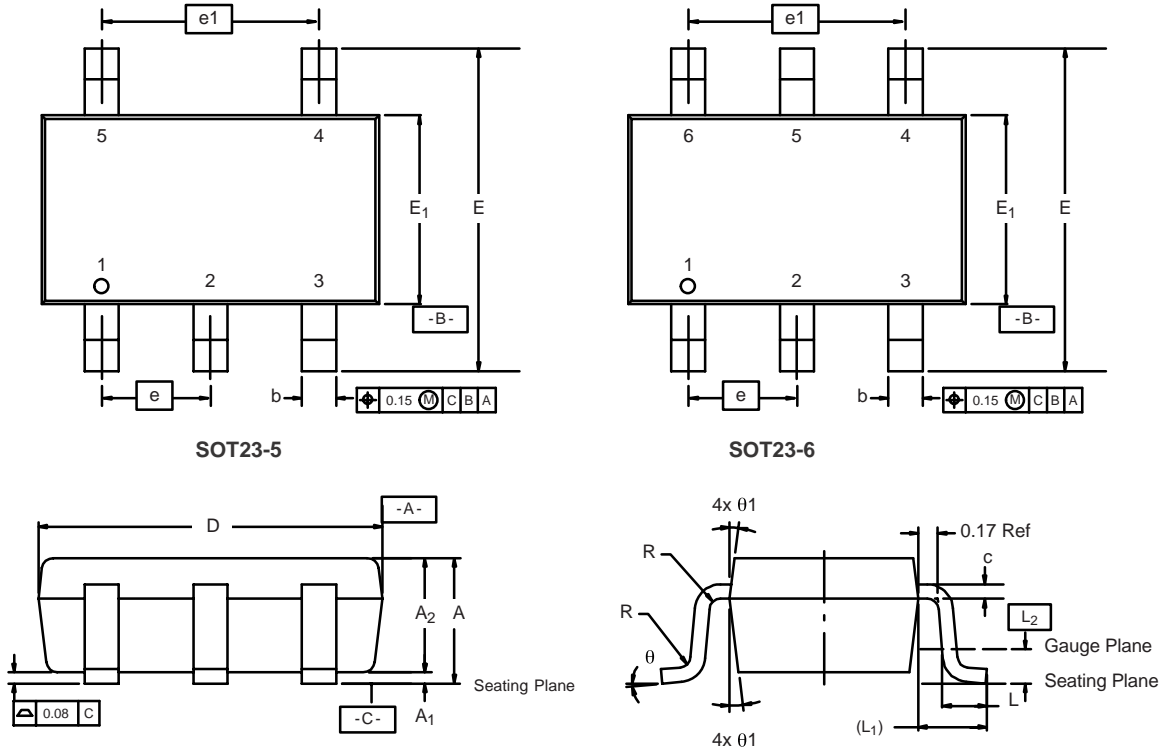


Normalized Thermal Transient Impedance, Junction-to-Ambient



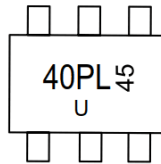
Normalized Thermal Transient Impedance, Junction-to-Foot

SOT23-5/6 PACKAGE OUTLIE DIMENSIONS



Dim	MILLIMETERS			INCHES		
	Min	Nom	Max	Min	Nom	Max
A	0.91	-	1.10	0.036	-	0.043
A <sub>1</sub>	0.01	-	0.10	0.0004	-	0.004
A <sub>2</sub>	0.90	-	1.00	0.035	0.038	0.039
b	0.30	0.32	0.45	0.012	0.013	0.018
c	0.10	0.15	0.20	0.004	0.006	0.008
D	2.95	3.05	3.10	0.116	0.120	0.122
E	2.70	2.85	2.98	0.106	0.112	0.117
E <sub>1</sub>	1.55	1.65	1.70	0.061	0.065	0.067
e	0.95 BSC			0.0374 BSC		
e <sub>1</sub>	1.80	1.90	2.00	0.071	0.075	0.079
L	0.32	-	0.50	0.012	-	0.020
L <sub>1</sub>	0.60 Ref			0.024 Ref		
L <sub>2</sub>	0.25 BSC			0.010 BSC		
R	0.10	-	-	0.004	-	-
θ	0°	4°	8°	0°	4°	8°
θ <sub>1</sub>	7° Nom			7° Nom		
ECN: C-06593-Rev. I, 18-Dec-06 DWG: 5540						

**Marking**



**Ordering information**

Order code	Package	Baseqty	Deliverymode
UMW AO6400	SOT23-6	3000	Tape and reel



单击下面可查看定价，库存，交付和生命周期等信息

[>>UMW\(友台半导体\)](#)