



YOUSHANG SEMICONDUCTOR

设计研发新型功率器件

各类小信号开关

中低压及高压大电流等场效应管

0755-83047638
ysbdt@szyoushang.cn
www.szyoushang.cn



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Product Summary

$V_{(BR)DSS}$	$R_{DS(ON) Max}$	I_D $T_A = +25^\circ C$
30V	0.12 Ω @ $V_{GS} = 10V$	3.0A
	0.18 Ω @ $V_{GS} = 4.5V$	2.5A

Description

This MOSFET is designed to minimize the on-state resistance ($R_{DS(ON)}$) and yet maintain superior switching performance, making it ideal for high-efficiency power management applications.

Applications

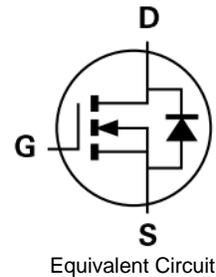
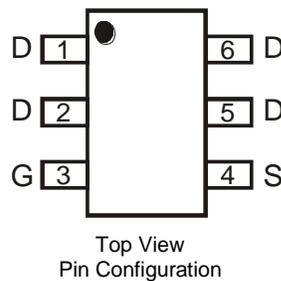
- DC-DC Converters
- Power Management Functions
- Backlighting

Features and Benefits

- Low Input Capacitance
- Low On-Resistance
- Fast Switching Speed

Mechanical Data

- Case: SOT26
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Finish – Tin Finish Annealed over Copper Leadframe; Solderable per MIL-STD-202, Method 208 E3
- Weight: 0.018 grams (Approximate)



Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Units
Drain-Source Voltage		V _{DSS}	30	V
Gate-Source Voltage		V _{GSS}	±20	V
Continuous Drain Current, V _{GS} = 10V	Steady State	T _A = +25°C (Note 6)	3.0	A
		T _A = +70°C (Note 6)	2.4	
		T _A = +25°C (Note 5)	2.4	
Maximum Body Diode Forward Current (Note 6)		I _S	2.4	A
Pulsed Drain Current (Note 7)		I _{DM}	10	A
Pulsed Source Current (Note 7)		I _{SM}	10	A

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

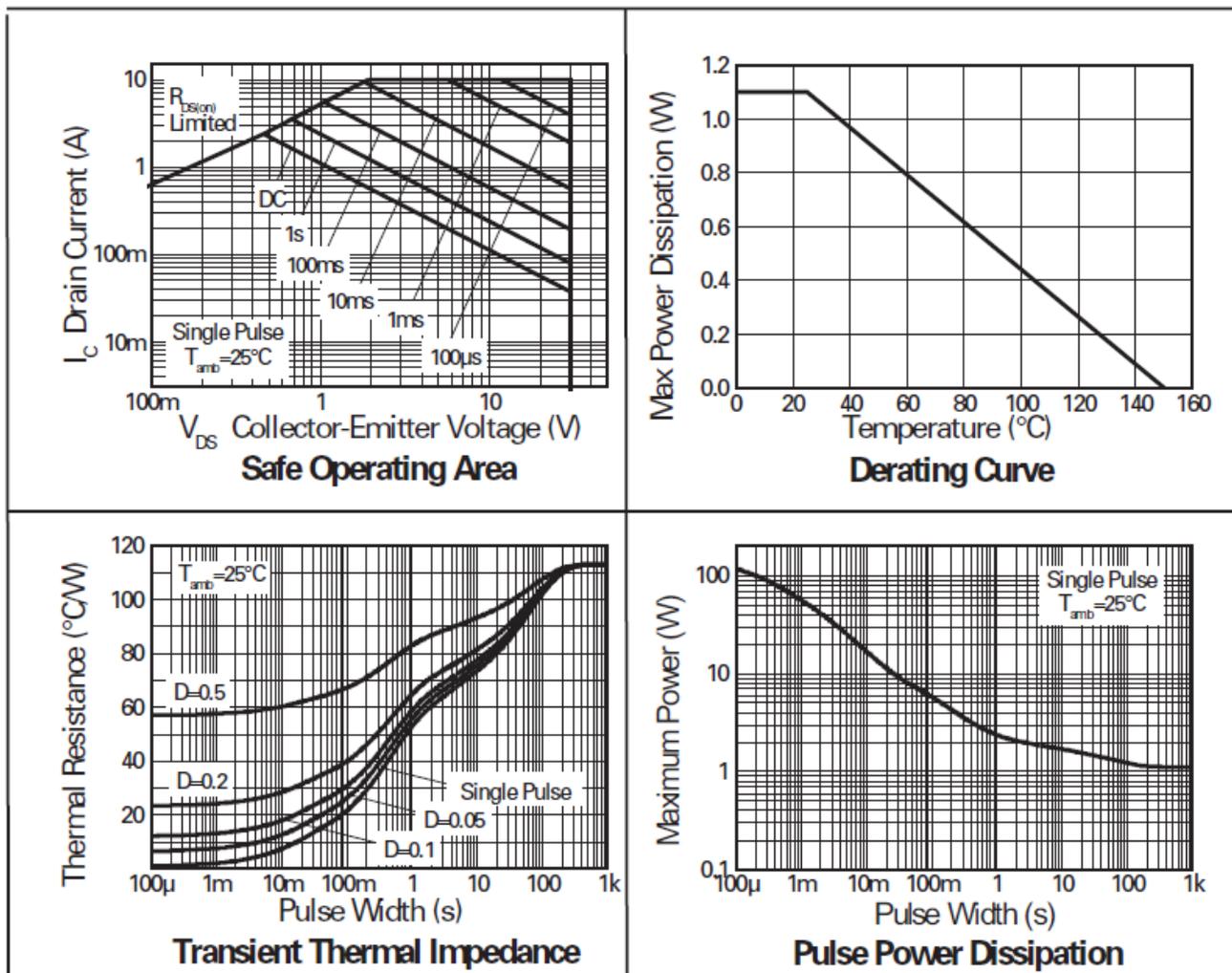
Characteristic		Symbol	Value	Units
Total Power Dissipation Linear Derating Factor	T _A = +25°C (Note 5)	P _D	1.1	W
			8.8	mW/°C
Total Power Dissipation Linear Derating Factor	T _A = +25°C (Note 6)	P _D	1.7	W
			13.6	mW/°C
Thermal Resistance, Junction to Ambient	Steady State (Note 5)	R _{θJA}	113	°C/W
	Steady State (Note 6)		70	°C/W
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

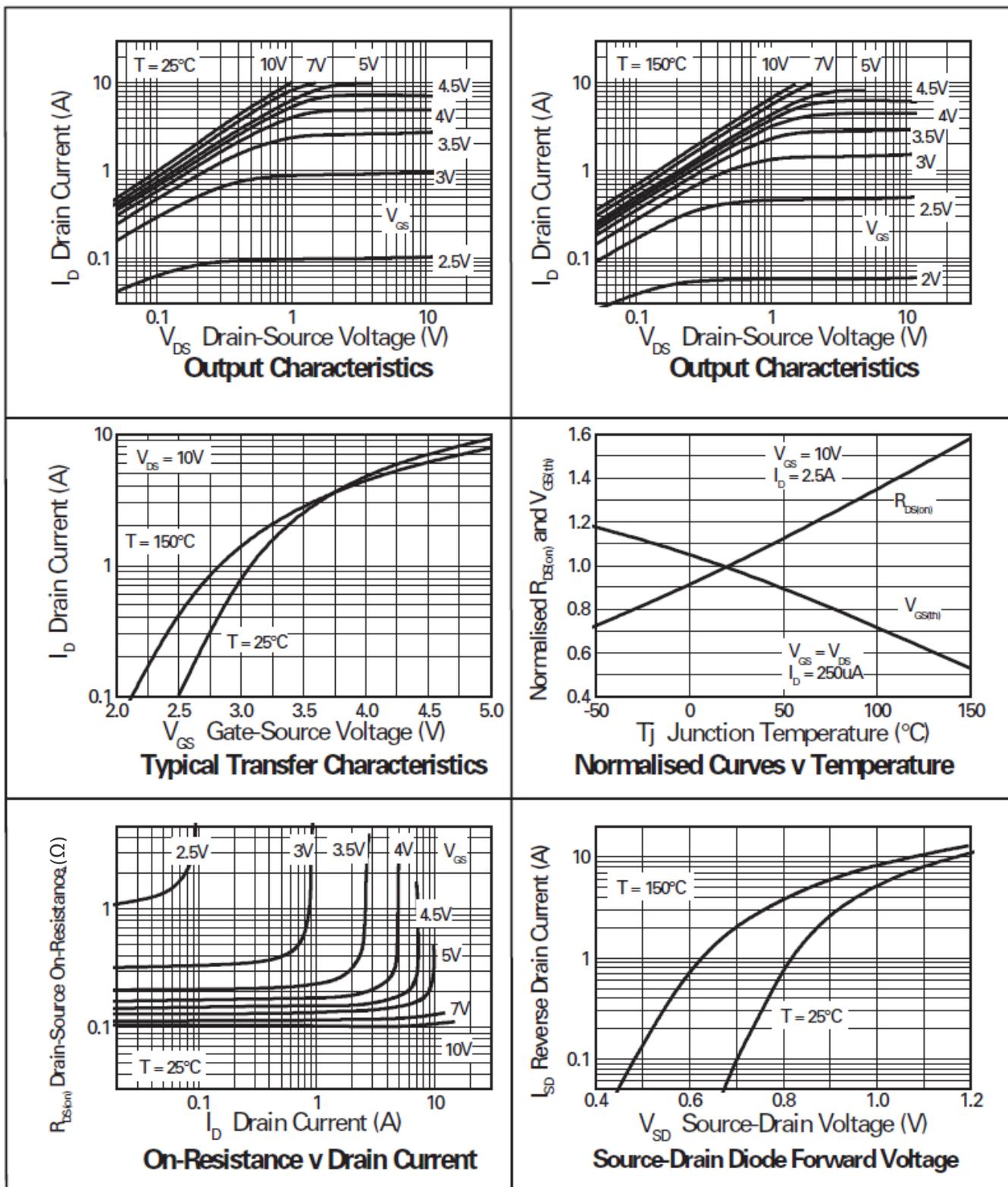
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 9)						
Drain-Source Breakdown Voltage	BV _{DSS}	30	—	—	V	V _{GS} = 0V, I _D = 250μA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	0.5	μA	V _{DS} = 30V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±20V, V _{DS} = 0V
ON CHARACTERISTICS (Note 9)						
Gate Threshold Voltage	V _{GS(TH)}	1.0	—	—	V	V _{DS} = V _{GS} , I _D = 250μA
Static Drain-Source On-Resistance (Note 8)	R _{DS(ON)}	—	0.106	0.12	Ω	V _{GS} = 10V, I _D = 2.5A
		—	—	0.18		V _{GS} = 4.5V, I _D = 2.0A
Diode Forward Voltage (Note 8)	V _{SD}	—	0.84	0.95	V	V _{GS} = 0V, I _S = 1.7A
Forward Transconductance (Notes 8 & 10)	g _{fs}	—	3.5	—	S	V _{DS} = 4.5V, I _D = 2.5A
DYNAMIC CHARACTERISTICS (Note 10)						
Input Capacitance	C _{iSS}	—	190	—	pF	V _{DS} = 25V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	C _{oss}	—	38	—		
Reverse Transfer Capacitance	C _{rSS}	—	20	—		
Total Gate Charge (V _{GS} = 5.0V)	Q _g	—	2.3	—	nC	V _{DS} = 15V, I _D = 2.5A
Total Gate Charge (V _{GS} = 10V)	Q _g	—	3.9	—		
Gate-Source Charge	Q _{gs}	—	0.6	—		
Gate-Drain Charge	Q _{gd}	—	0.9	—		
Turn-On Delay Time	t _{D(ON)}	—	1.7	—	ns	V _{GS} = 10V, V _{DD} = 15V, R _G = 6.0Ω, I _D = 2.5A
Turn-On Rise Time	t _r	—	2.3	—		
Turn-Off Delay Time	t _{D(OFF)}	—	6.6	—		
Turn-Off Fall Time	t _f	—	2.9	—		
Body Diode Reverse Recovery Time	t _{RR}	—	17.7	—	ns	I _F = 2.5A, dI/dt = 100A/μs
Body Diode Reverse Recovery Charge	Q _{RR}	—	13.0	—	nC	

- Notes:
5. For a device surface mounted on 25mm x 25mm FR-4 PCB with high coverage of single sided 1oz copper, in still air conditions.
 6. For a device surface mounted on FR-4 PCB measured at t ≤ 5 secs.
 7. Repetitive rating 25mm x 25mm FR-4 PCB, D = 0.05, pulse width 10μs - pulse width limited by maximum junction temperature. Refer to Transient Thermal Impedance graph.
 8. Measured under pulsed conditions. Width=300μs. Duty cycle ≤ 2%.
 9. Short duration pulse test used to minimize self-heating effect.
 10. Guaranteed by design. Not subject to product testing.

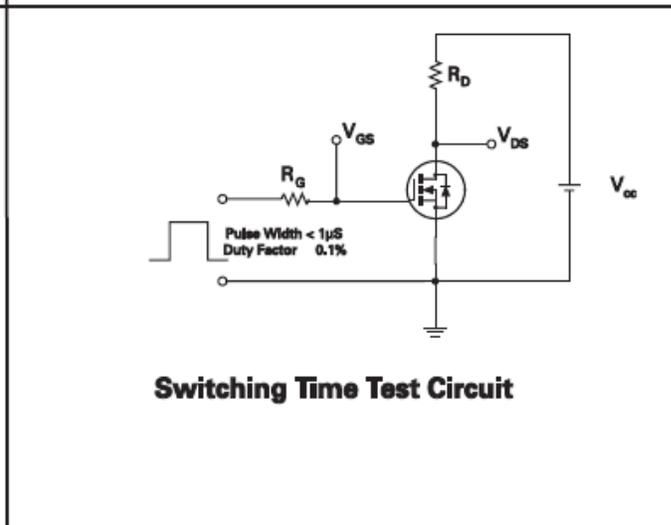
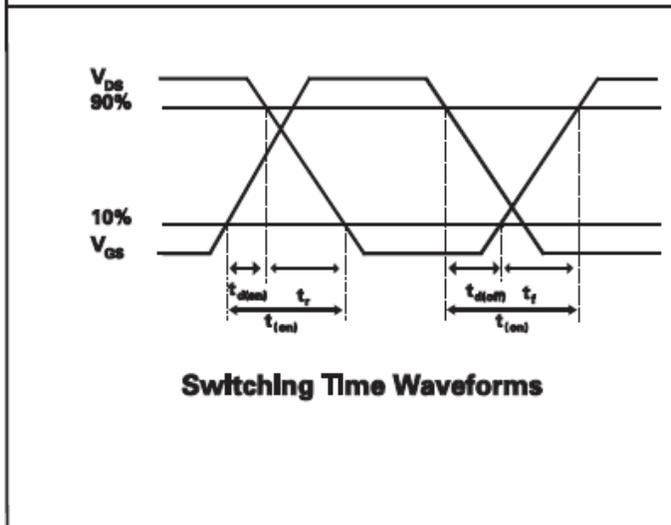
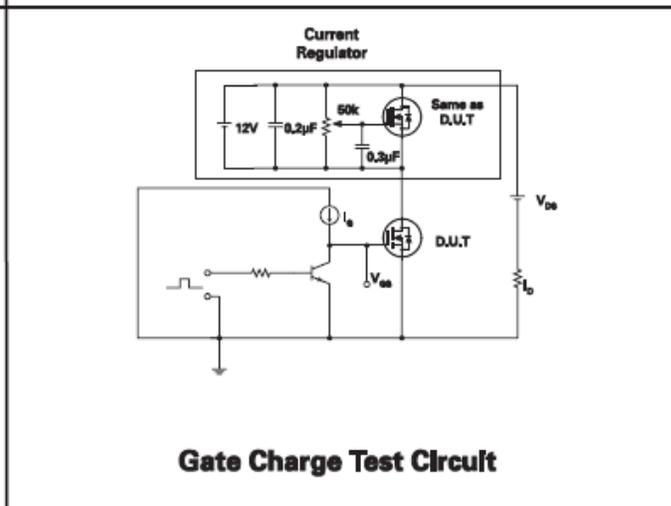
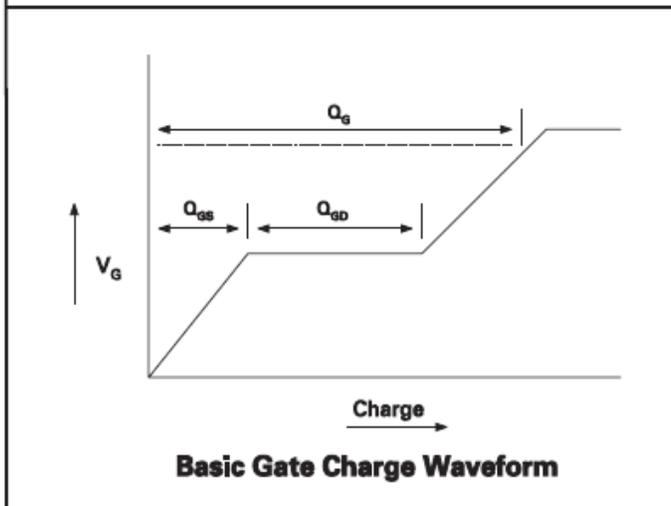
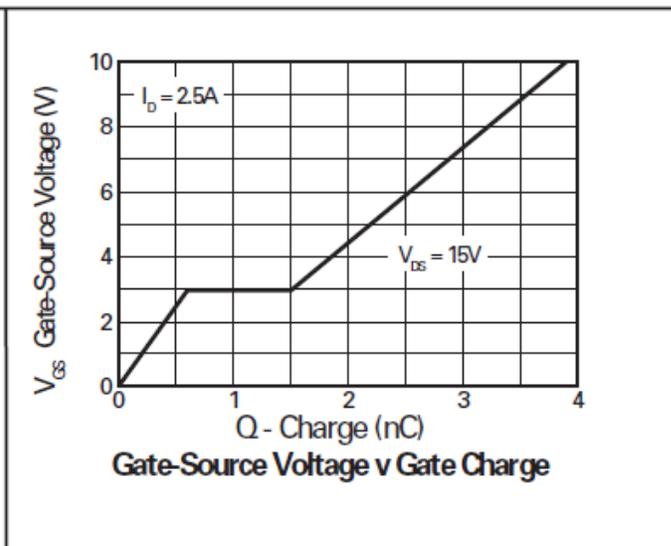
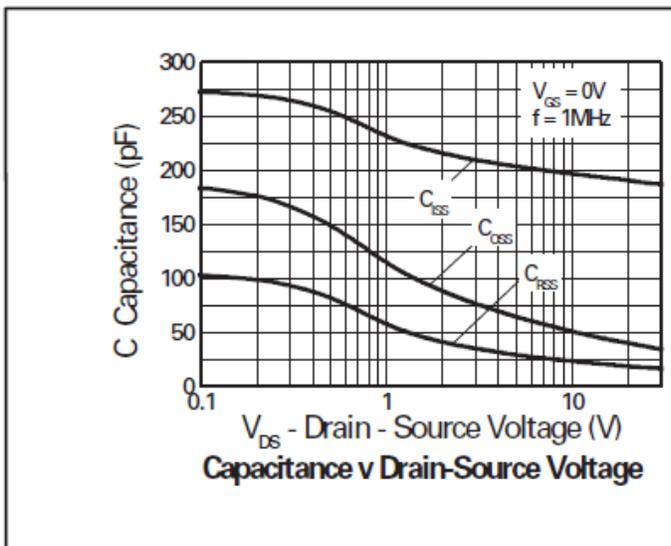
Typical Characteristics



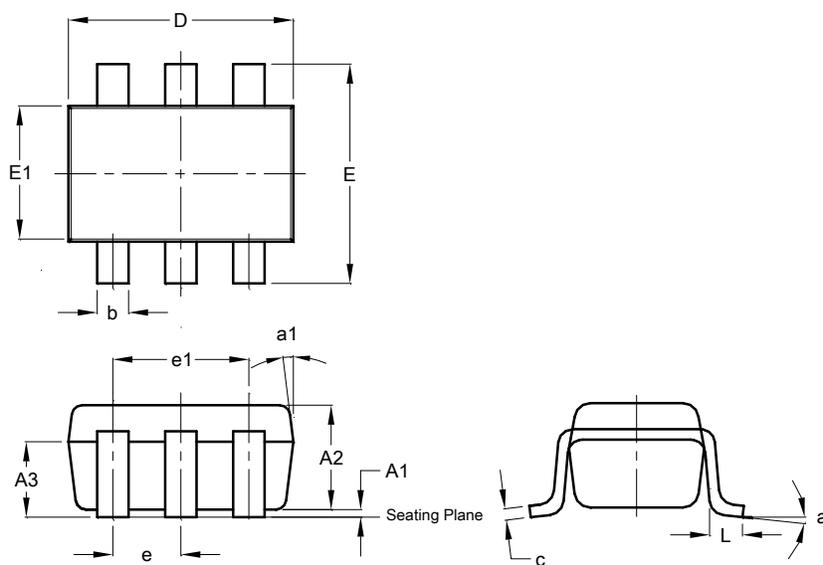
Typical Characteristics (cont.)



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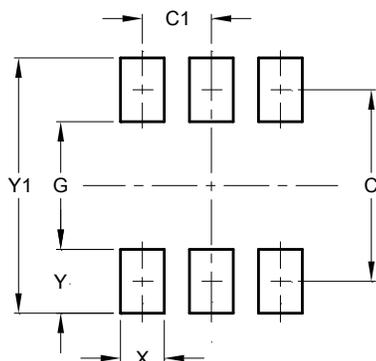


Package Outline Dimensions



SOT26			
Dim	Min	Max	Typ
A1	0.013	0.10	0.05
A2	1.00	1.30	1.10
A3	0.70	0.80	0.75
b	0.35	0.50	0.38
c	0.10	0.20	0.15
D	2.90	3.10	3.00
e	-	-	0.95
e1	-	-	1.90
E	2.70	3.00	2.80
E1	1.50	1.70	1.60
L	0.35	0.55	0.40
a	-	-	8°
a1	-	-	7°
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
C	2.40
C1	0.95
G	1.60
X	0.55
Y	0.80
Y1	3.20