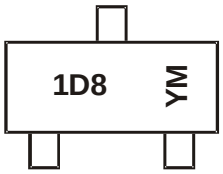
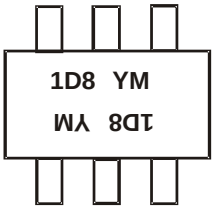
Marking Information



SOT23



TSOT26

1D8 = Product Type Marking Code
YM = Date Code Marking
Y or $\overline{Y}$ = Year (ex: F= 2018)
M = Month (ex: 9 = September)

Date Code Key

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Code	B	C	D	E	F	G	H	I	J	K	L	M	N

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

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

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	60	V
Gate-Source Voltage			V_{GSS}	±12	V
Continuous Drain Current (Note 6) SOT23	Steady State	T_A = +25°C T_A = +70°C	I_D	470 370	mA
Continuous Drain Current (Note 6) TSOT26	Steady State	T_A = +25°C T_A = +70°C	I_D	630 500	mA
Maximum Continuous Body Diode Forward Current (Note 6)			I_S	0.5	A
Single Pulse Drain-to-Source Avalanche Energy (for relay coils/inductive loads of 80Ω or higher) (T_J initial = +85°C)			E_Z	200	mJ
Peak Power Dissipation, Drain-to-Source (non-repetitive current square pulse 1.0ms duration) (T_J initial = +85°C)			P_{PK}	20	W
Load Dump Pulse, Drain-to-Source, R_{SOURCE} = 0.5Ω, t = 300ms) (for relay coils/inductive loads of 80Ω or higher) (T_J Initial = +85°C)			E_{LD1}	60	V
Inductive Switching Transient 1, Drain-to-Source (Waveform: R_{SOURCE} = 10Ω, t = 2.0ms) (for relay coils/inductive loads of 80Ω or higher) (T_J Initial = +85°C)			E_{LD2}	100	V
Inductive Switching Transient 2, Drain-to-Source (Waveform: R_{SOURCE} = 4.0Ω, t = 50µs) (for relay coils/inductive loads of 80Ω or higher) (T_J Initial = +85°C)			E_{LD3}	300	V
Reverse Battery, 10 Minutes (Drain-to-Source) (for relay coils/inductive loads of 80Ω or higher)			Rev−Bat	-14	V
Dual Voltage Jump Start, 10 Minutes (Drain-to-Source)			Dual−Volt	28	V
ESD Human Body Model (HBM)			ESD	4,000	V

Thermal Characteristics (SOT23) (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)		P_D	390	mW
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	$R_{\theta JA}$	321	°C/W
Total Power Dissipation (Note 6)		P_D	610	mW
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	$R_{\theta JA}$	208	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

Thermal Characteristics (TSOT26) (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)		P_D	820	mW
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	$R_{\theta JA}$	154	°C/W
Total Power Dissipation (Note 6)		P_D	1090	mW
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	$R_{\theta JA}$	116	°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 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	60	—	—	V	V_{GS} = 0V, I_D = 10mA
Zero Gate Voltage Drain Current	I_{DSS}	—	—	50 0.5	μA	V_{DS} = 60V, V_{GS} = 0V V_{DS} = 12V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±90 ±60	μA	V_{GS} = ±5V, V_{DS} = 0V V_{GS} = ±3V, V_{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(TH)}$	1.3	—	2.0	V	V_{DS} = V_{GS}, I_D = 1mA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	1.1 1.4	1.8 2.4	Ω	V_{GS} =5V, I_D = 0.15A V_{GS} = 3V, I_D = 0.15A
Forward Transfer Admittance	$\|Y_{fs}\|$	80	—	—	ms	V_{DS} =12V, I_D = 0.15A
Diode Forward Voltage	V_{SD}	—	—	1.2	V	V_{GS} = 0V, I_S = 0.15A
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	—	12.9	—	pF	V_{DS} = 12V, V_{GS} = 0V f = 1.0MHz
Output Capacitance	C_{oss}	—	17	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	0.84	—	pF	
Total Gate Charge	Q_g	—	0.74	—	nC	V_{GS} = 5V, V_{DS} = 12V, I_D =150mA
Gate-Source Charge	Q_{gs}	—	0.19	—	nC	
Gate-Drain Charge	Q_{gd}	—	0.16	—	nC	
Turn-On Delay Time	$t_{D(ON)}$	—	131	—	ns	V_{DD} = 12V, V_{GS} = 5V
Turn-On Rise Time	t_R	—	301	—	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	582	—	ns	
Turn-Off Fall Time	t_F	—	440	—	ns	

Notes: 5. Device mounted on FR-4 PCB, with minimum recommended pad layout.
6. Device mounted on 1" x 1" FR-4 PCB with high coverage 2oz. copper, single sided.
7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to product testing.

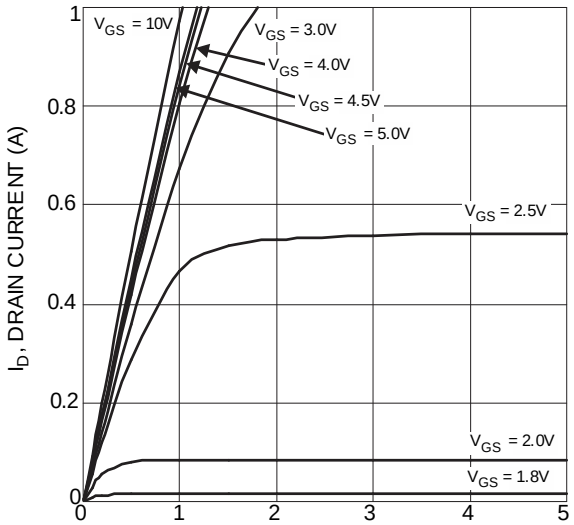


Figure 1 Typical Output Characteristic

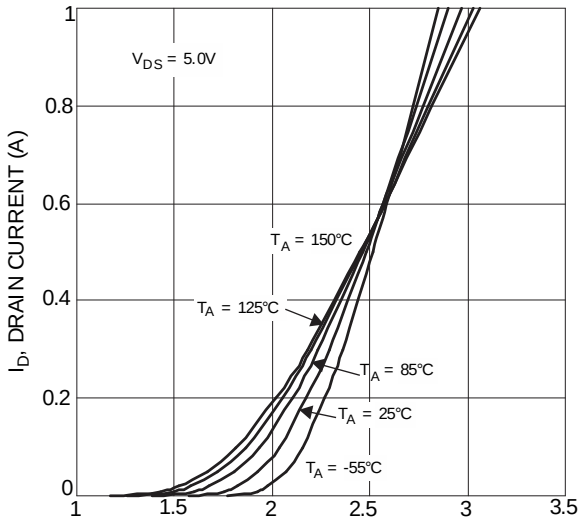


Figure 2 Typical Transfer Characteristics

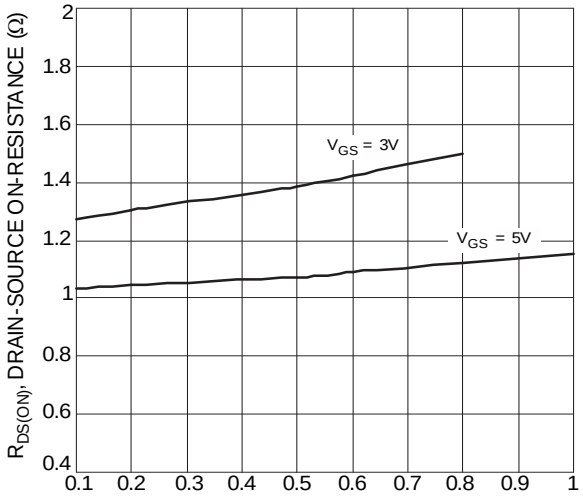


Figure 3 Typical On-Resistance vs.
Drain Current and Gate Voltage

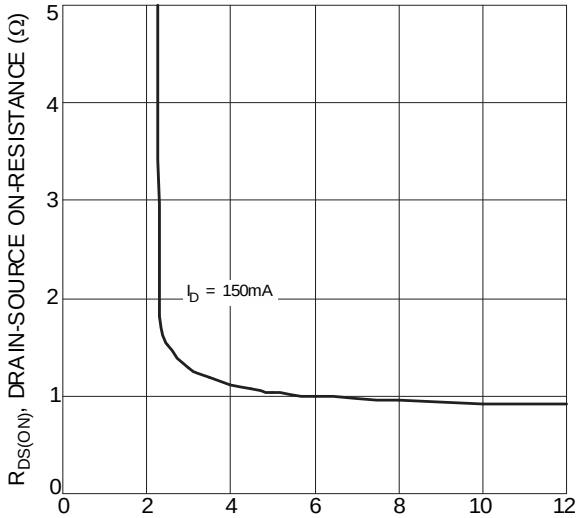


Figure 4 Typical Transfer Characteristic

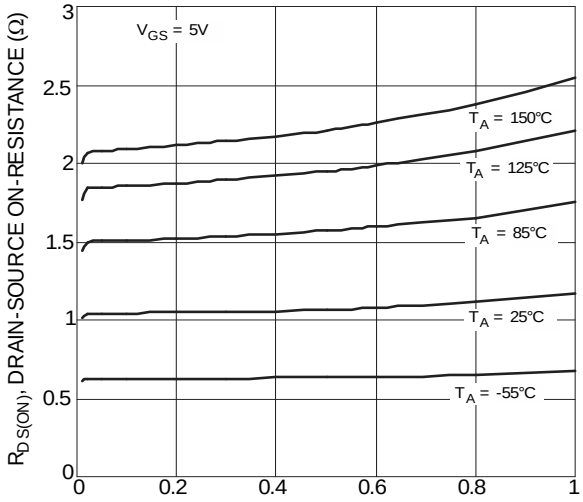


Figure 5 Typical On-Resistance vs.
Drain Current and Temperature

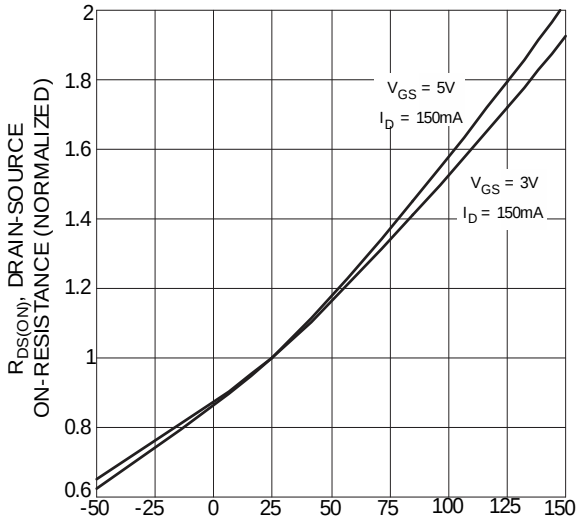


Figure 6 On-Resistance Variation with Temperature

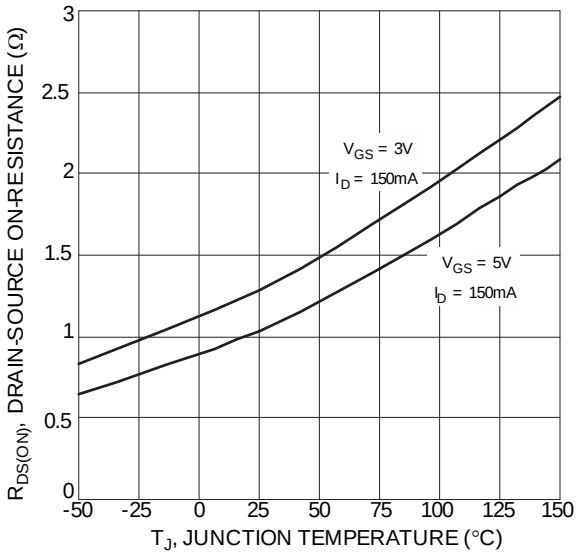


Figure 7 On-Resistance Variation with Temperature

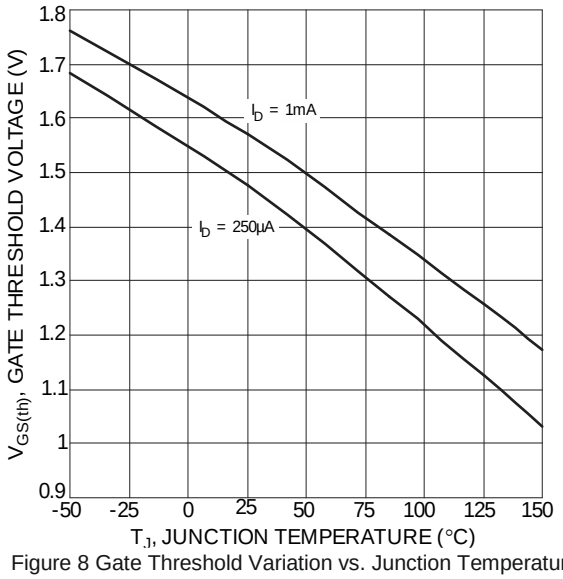


Figure 8 Gate Threshold Variation vs. Junction Temperature

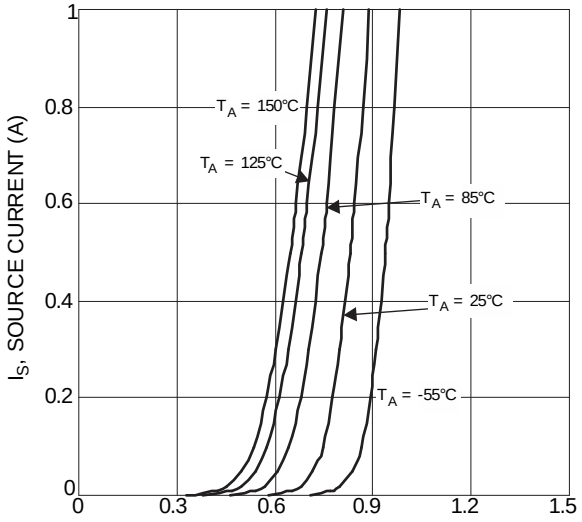


Figure 9 Diode Forward Voltage vs. Current

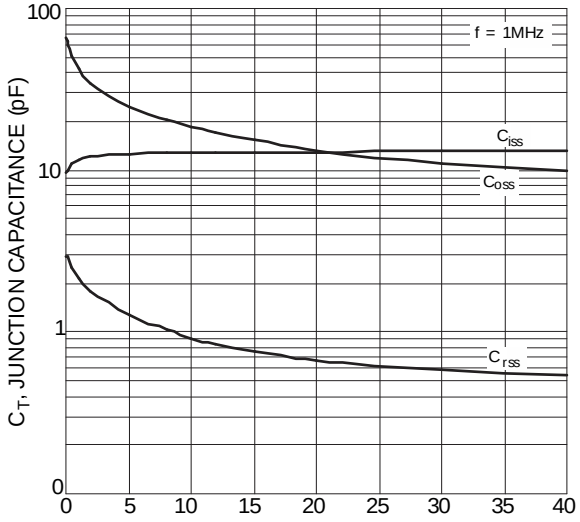


Figure 10 Typical Junction Capacitance

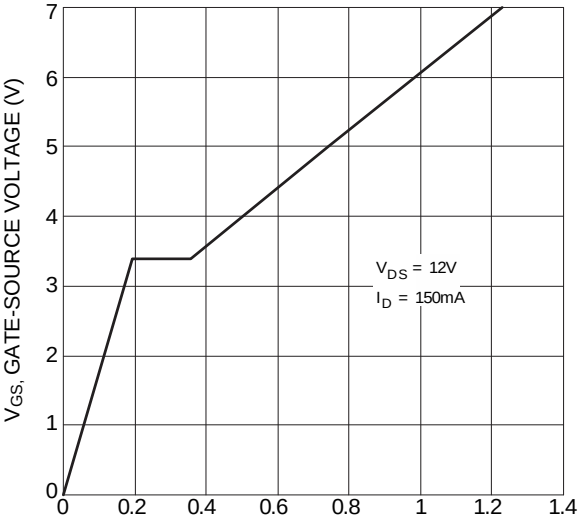


Figure 11 Gate Charge

SOT23:

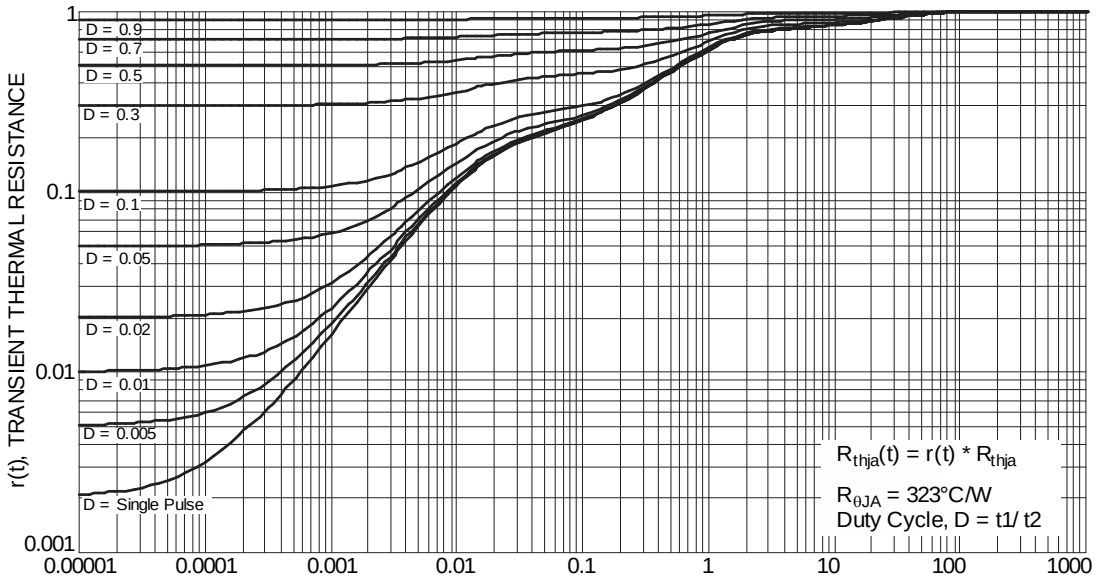


Figure 12 Transient Thermal Resistance

TSOT26:

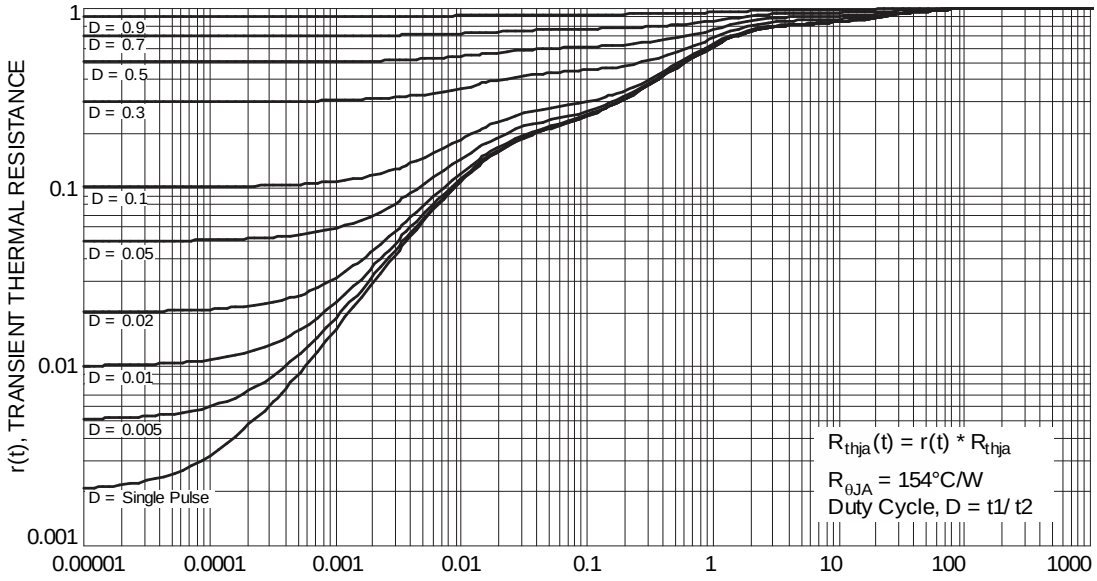
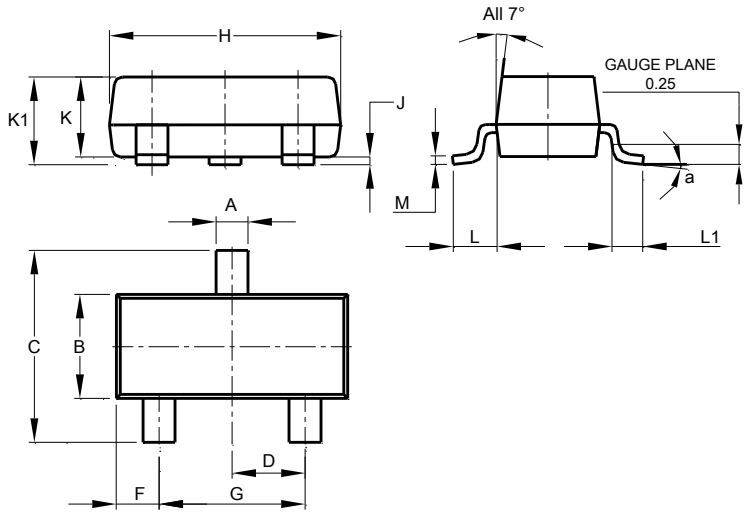


Figure 13 Transient Thermal Resistance

Package Outline Dimensions

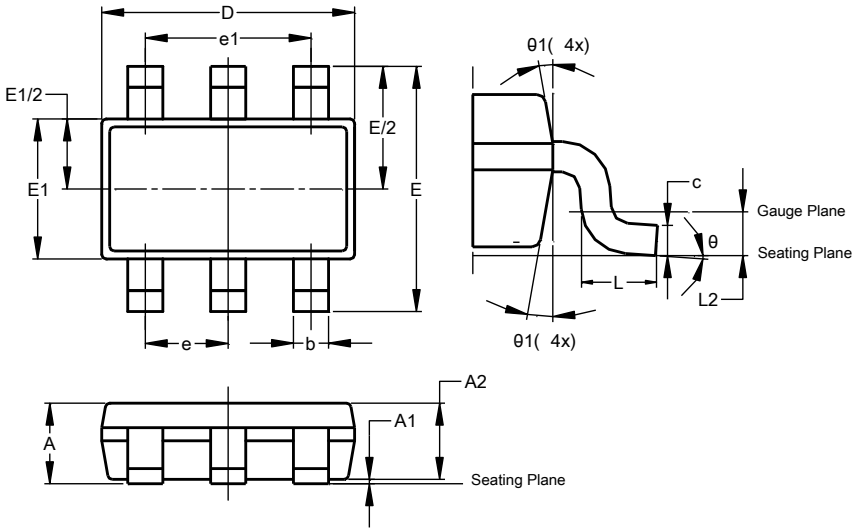
Please see http://www.diodes.com/package-outlines.html for the latest version.

SOT23



SOT23			
Dim	**Min**	**Max**	**Typ**
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

TSOT26

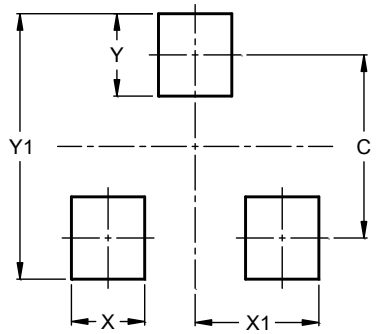


TSOT26			
Dim	**Min**	**Max**	**Typ**
A	–	1.00	–
A1	0.010	0.100	–
A2	0.840	0.900	–
D	2.800	3.000	2.900
E	2.800 BSC		
E1	1.500	1.700	1.600
b	0.300	0.450	–
c	0.120	0.200	–
e	0.950 BSC		
e1	1.900 BSC		
L	0.30	0.50	–
L2	0.250 BSC		
θ	0°	8°	4°
θ1	4°	12°	–
All Dimensions in mm			

Suggested Pad Layout

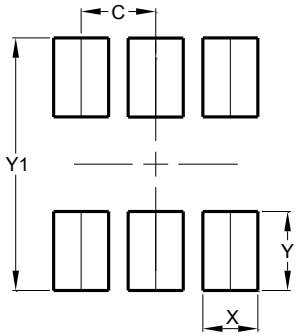
Please see http://www.diodes.com/package-outlines.html for the latest version.

SOT23



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

TSOT26



Dimensions	Value (in mm)
C	0.950
X	0.700
Y	1.000
Y1	3.199

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