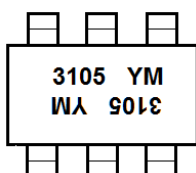
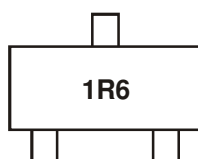


Marking Information



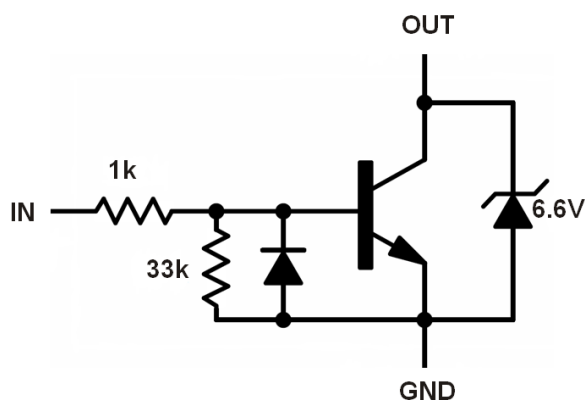
1R6 = SOT23, Product Type Marking Code
 3105 = SOT26, Product Type Marking Code
 YM = Date Code Marking
 Y or Y = Year (ex: C = 2015)
 M or M = Month (ex: 9 = September)

Date Code Key

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

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

Internal Device Schematic



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

Characteristic	Symbol	Limit	Unit
Supply Voltage	V _{CC}	6.0	V
Input Voltage (Forward)	V _{IN(FWD)}	6.0	V
Input Voltage (Reverse)	V _{IN(REV)}	-0.5	V
Output Sink Continuous Current	I _O	500	mA
Repetitive Pulse Zener Energy Limit (Duty Cycle 0.01%)	E _{zpk}	50	mJ

Thermal Characteristics for DRDC3105F (SOT23) (@T_A = +25 °C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation	P _D	310	mW
		350	
Thermal Resistance, Junction to Ambient	R _{θJA}	403	°C/W
		357	
Thermal Resistance, Junction to Leads	R _{θJL}	350	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Thermal Characteristics for DRDC3105E6 (SOT26) (@T_A = +25 °C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation	P _D	0.9	W
Linear Derating Factor		7.2	
		1.1	
		8.8	
	R _{θJA}	1.7	°C/W
		13.6	
		139	
		113	
Thermal Resistance, Junction to Ambient	R _{θJA}	73	°C/W
Thermal Resistance, Junction to Leads	R _{θJL}	100	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

- Notes:
- For a device mounted on minimum recommended pad layout 1oz weight copper that is on a single-sided FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
 - Same as Note 5, except the device is mounted on 15mm X 15mm 1oz copper.
 - Same as Note 5, except the device is mounted on 25mm X 25mm 1oz copper.
 - Same as Note 7, except the device is measured at < 5 seconds.
 - For a device with one active die.
 - For a device with two die running at equal power.
 - Thermal resistance from junction to solder-point (at the end of the "OUT" lead).

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Output Zener Breakdown Voltage	BV _(out) BV _(-out)	6.2 -	6.6 0.67	7.0 -	V	@ I _T = 10 mA Pulse
Output Leakage Current @ 0 Input Voltage	I _{OO}	—	—	0.1 30	μA	V _O = 5.5 V, T _A = +25 °C V _O = 5.5 V, T _A = +85 °C
"ON" State Input Voltage (Note 12)	V _{in(on)}	—	0.99	1.5	V	I _O = 100 mA, V _O = 150mV
"OFF" State Input Voltage (Note 13)	V _{in(off)}	400	540	—	mV	I _O = 100 μA, V _O = 4.9V
ON CHARACTERISTICS						
Input Bias Current (H _{FE} Limited)	I _{in}	—	0.7	1.6	mA	I _O = 250 mA, V _O = 0.25V
Output Saturation Voltage	V _{O(sat)}	—	125	160	mV	I _O = 250 mA, I _{in} = 1.5 mA
Output Sink Current – Continuous	I _{O(on)}	250	430	—	mA	V _{CE} = 0.25 V, I _{in} = 1.5 mA
SWITCHING CHARACTERISTICS (Refer to Figure 1)						
Propagation Delay Times:						
High to Low Propagation Delay; (5.0V 74HC04)	t _{PHL}	—	20.4	—	ns	—
Low to High Propagation Delay; (5.0V 74HC04)	t _{PLH}	—	1.43	—	μs	—
High to Low Propagation Delay; 13 (3.0V 74HC04)	t _{PHL}	—	32.2	—	ns	—
Low to High Propagation Delay; 13 (3.0V 74HC04)	t _{PLH}	—	760	—	ns	—
High to Low Propagation Delay; 14 (5.0V 74LS04)	t _{PHL}	—	25.3	—	ns	—
Low to High Propagation Delay; 14 (5.0V 74LS04)	t _{PLH}	—	2.57	—	μs	—
Transition Times:						
Fall Time; (5.0V 74HC04)	t _f	—	12.5	—	ns	—
Rise Time; (5.0V 74HC04)	t _r	—	411	—	ns	—
Fall Time; 13 (3.0V 74HC04)	t _f	—	21.1	—	ns	—
Rise Time; 13 (3.0V 74HC04)	t _r	—	220	—	ns	—
Fall Time; 14 (5.0V 74LS04)	t _f	—	15.1	—	ns	—
Rise Time; 14 (5.0V 74LS04)	t _r	—	849	—	ns	—

Notes: 12. The device is guaranteed to be in "ON" state with V_{in(on)} above 1.5V.
13. The device is guaranteed to be in "OFF" state with V_{in(off)} below 400mV.

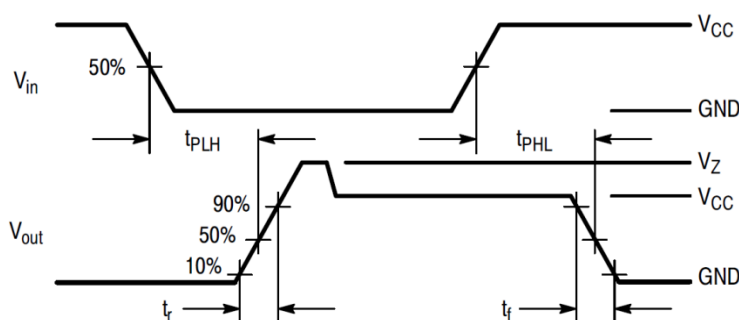


Figure 1. Switching Waveforms

Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

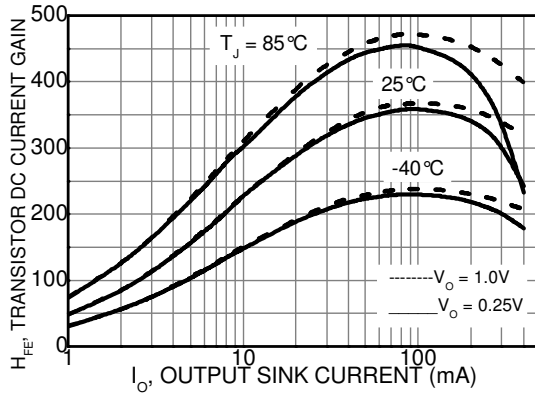


Figure 2. Transistor DC Current Gain

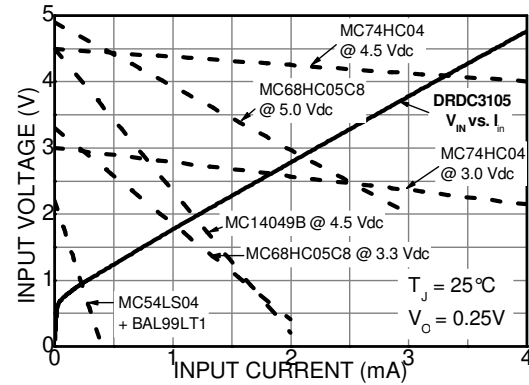


Figure 3. Input V-I Requirement Compared to Possible Source Logic Outputs

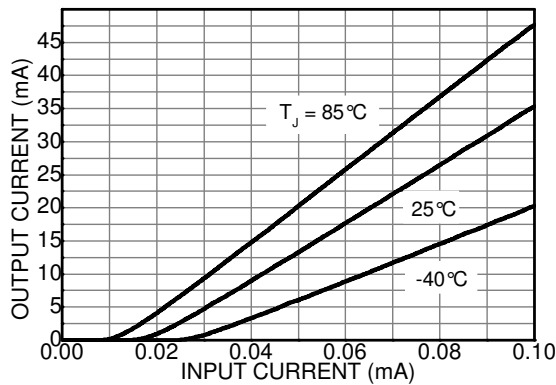


Figure 4. Threshold Effects

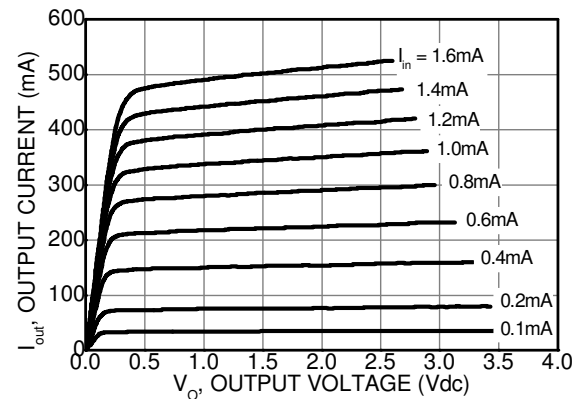


Figure 5. Transistor Output V-I Characteristic

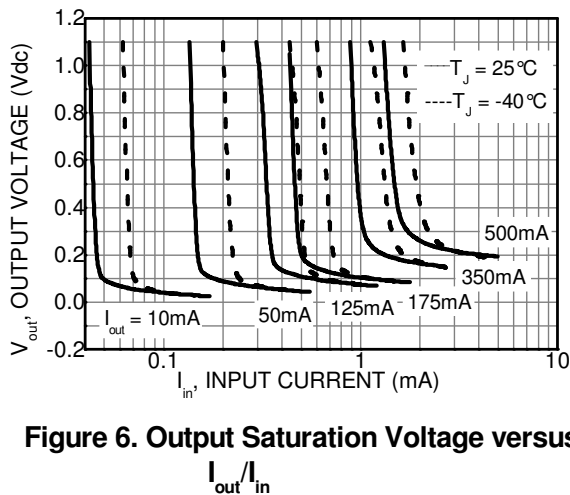


Figure 6. Output Saturation Voltage versus I_{out}/I_{in}

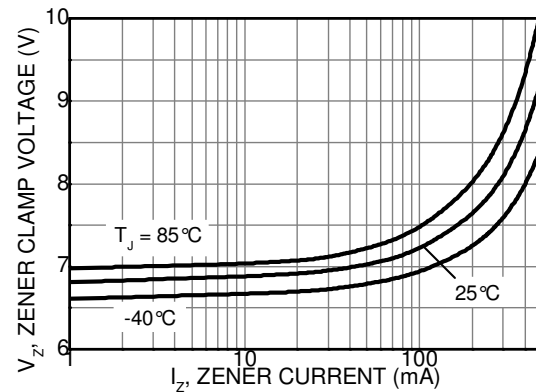


Figure 7. Zener Clamp Voltage versus Zener Current

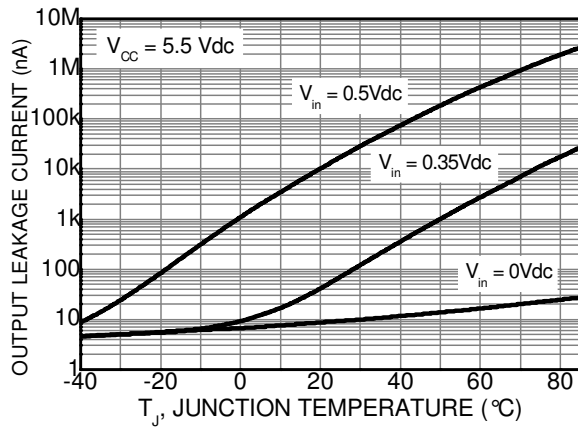


Figure 8. Output Leakage Current versus Temperature

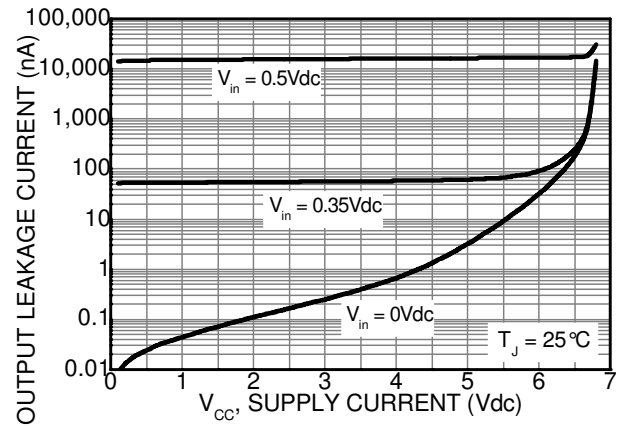


Figure 9. Output Leakage Current versus Supply Voltage

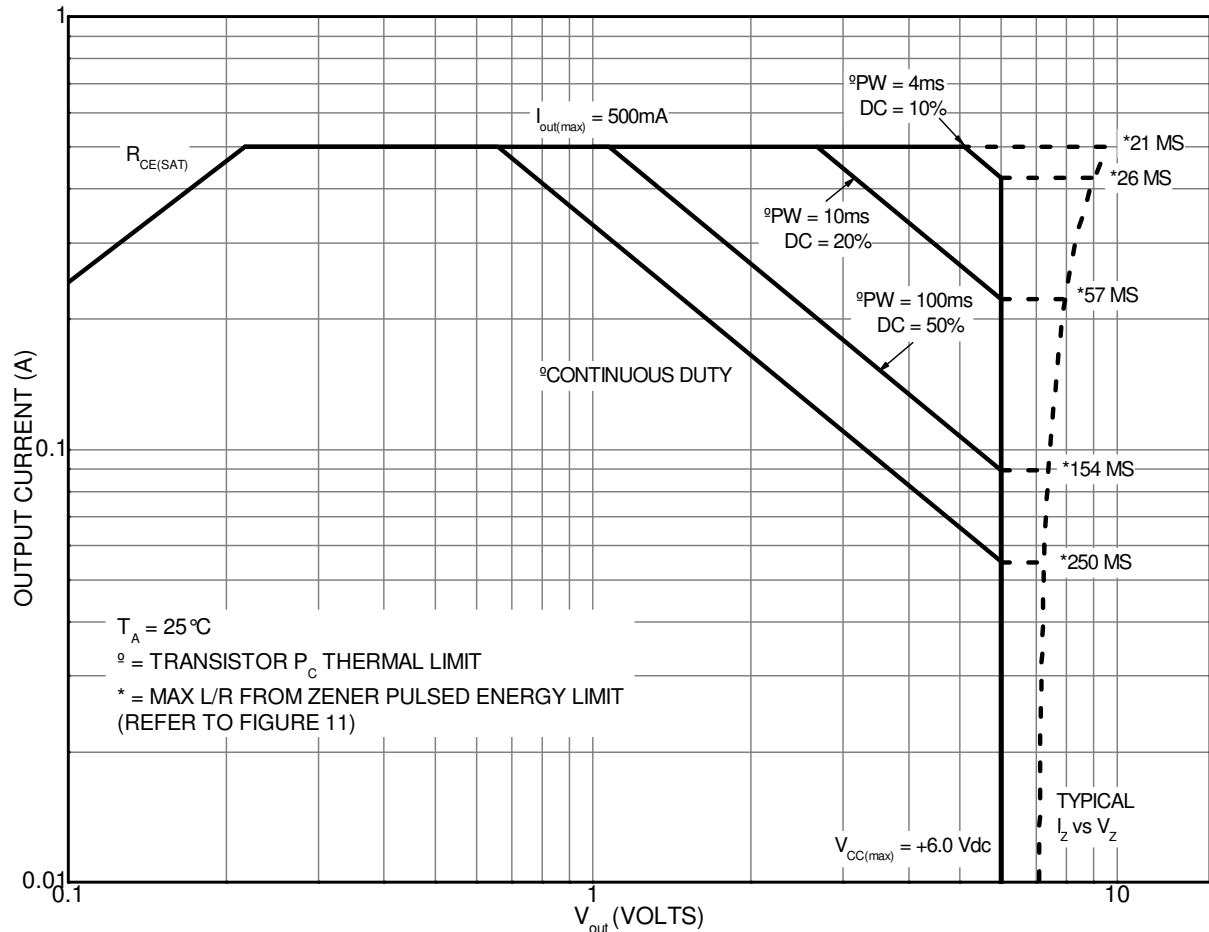


Figure 10. Safe Operating Area

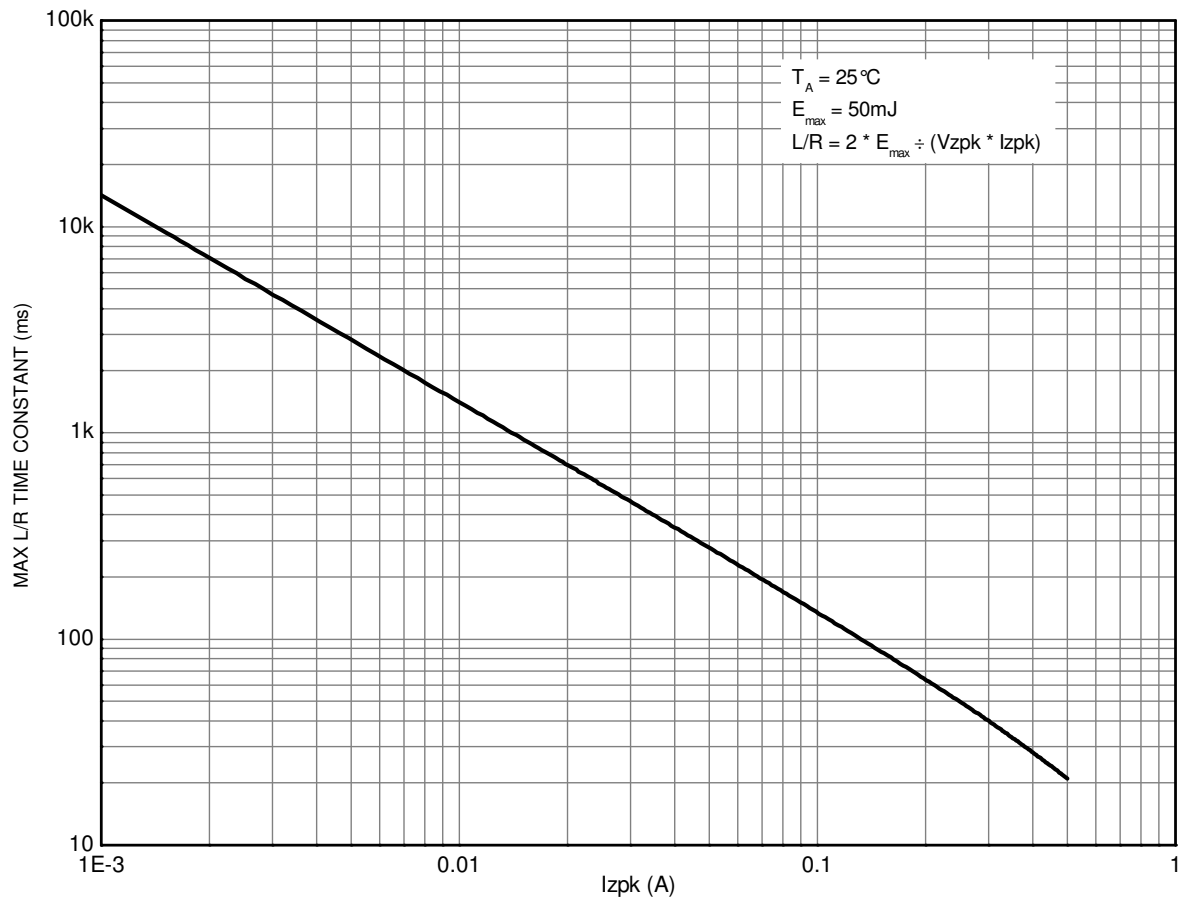


Figure 11. Zener Repetitive Pulse Energy Limit on L/R Time Constant

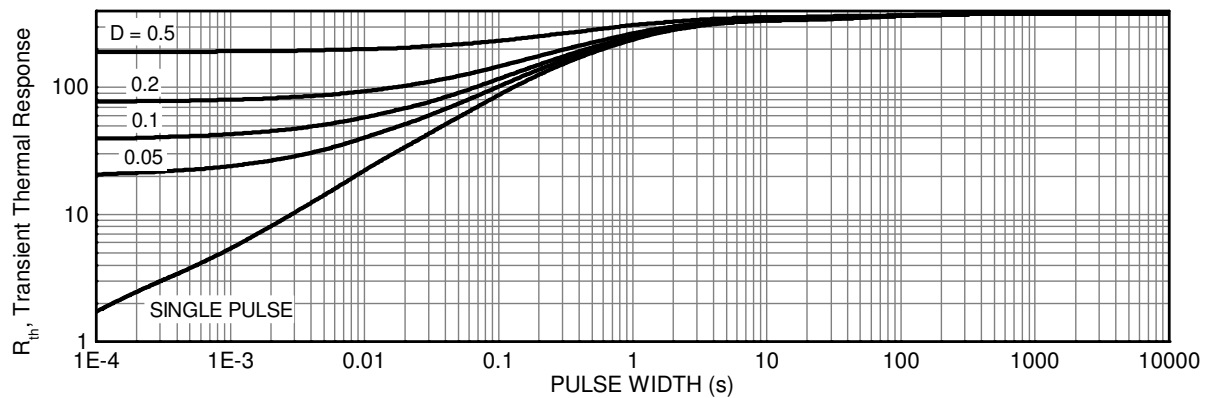
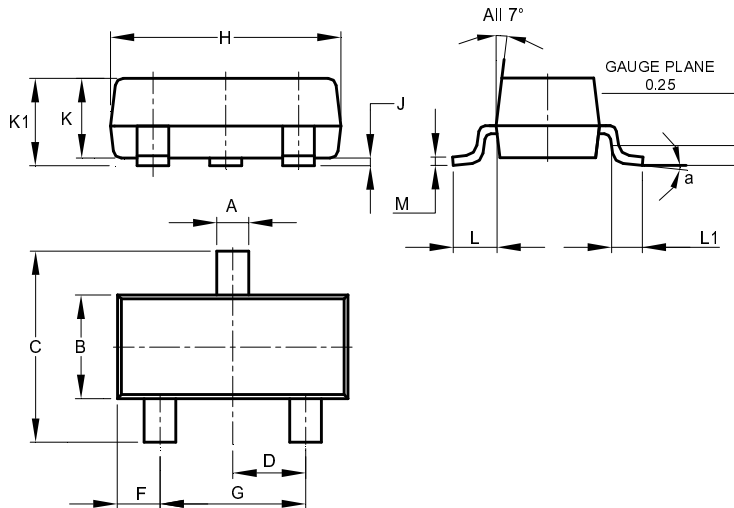


Figure 12. Transient Thermal Response

Package Outline Dimensions

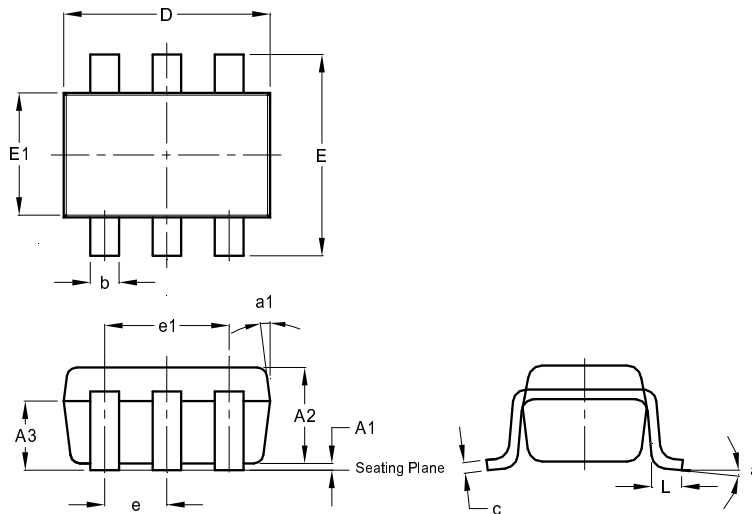
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.

Package Type: 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	8°		
All Dimensions in mm			

Package Type: SOT26

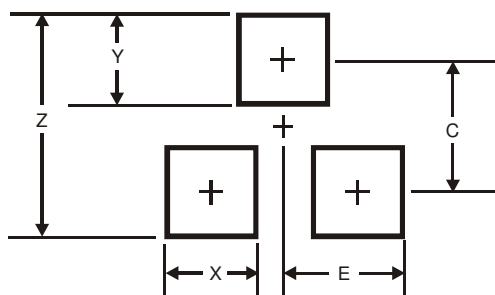


SOT26			
Dim	Min	Max	Typ
A1	0.013	0.10	0.05
A2	1.00	1.30	1.10
A3	0.70	0.80	0.75
b	0.35	0.50	0.38
c	0.10	0.20	0.15
D	2.90	3.10	3.00
e	-	-	0.95
e1	-	-	1.90
E	2.70	3.00	2.80
E1	1.50	1.70	1.60
L	0.35	0.55	0.40
a	-	-	8°
a1	-	-	7°
All Dimensions in mm			

Suggested Pad Layout

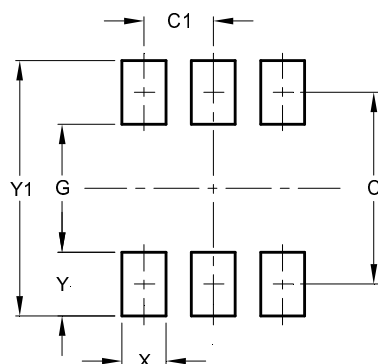
Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.

Package Type: SOT23



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

Package Type: SOT26



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

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