



Product Change Notification / SYST-14YWZW882

Date:

17-Mar-2023

Product Category:

N-Channel Enhancement Mode MOSFETs

PCN Type:

Document Change

Notification Subject:

Data Sheet - TN2130 N-Channel Enhancement-Mode Vertical DMOS FET Data Sheet

Affected CPNs:

[SYST-14YWZW882_Affected_CPN_03172023.pdf](#)

[SYST-14YWZW882_Affected_CPN_03172023.csv](#)

Notification Text:

SYST-14YWZW882

Microchip has released a new Datasheet for the TN2130 N-Channel Enhancement-Mode Vertical DMOS FET Data Sheet of devices. If you are using one of these devices please read the document located at [TN2130 N-Channel Enhancement-Mode Vertical DMOS FET Data Sheet](#).

Notification Status: Final

Description of Change:

- Added 6-Lead DFN package to Package Type, Pin Function Table and Product Identification System.
- Updated Absolute Maximum Ratings(+).
- Updated Section 5.1, Package Marking Information.
- Made minor text changes throughout the document.

Impacts to Data Sheet: See above details.

Change Implementation Status: Complete

Reason for Change: To Improve Productivity

Date Document Changes Effective: 15 Mar 2023

NOTE: Please be advised that this is a change to the document only the product has not been changed.

Markings to Distinguish Revised from Unrevised Devices: N/A

Attachments:

[TN2130 N-Channel Enhancement-Mode Vertical DMOS FET Data Sheet](#)

Please contact your local [Microchip sales office](#) with questions or concerns regarding this notification.

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Affected Catalog Part Numbers (CPN)

TN2130K1-G

TN2130MF-G-VAO

TN2130K1-G-VAO

N-Channel Enhancement-Mode Vertical DMOS FET

Features

- Free from Secondary Breakdown
- Low Power Drive Requirement
- Ease of Paralleling
- Low C_{ISS} and Fast Switching Speeds
- Excellent Thermal Stability
- Integral Source-Drain Diode
- High Input Impedance and High Gain

Applications

- Logic-Level Interfaces (Ideal for TTL and CMOS)
- Solid-State Relays
- Battery-Operated Systems
- Photovoltaic Drives
- Analog Switches
- General Purpose Line Drivers
- Telecommunication Switches

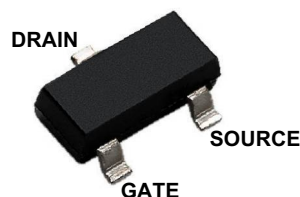
General Description

The TN2130 low-threshold, Enhancement-mode (normally-off) transistor uses a vertical DMOS structure and a well-proven silicon-gate manufacturing process. This combination produces a device with the power handling capabilities of bipolar transistors and the high input impedance and positive temperature coefficient inherent in MOS devices. Characteristic of all MOS structures, this device is free from thermal runaway and thermally induced secondary breakdown.

Microchip's vertical DMOS FETs are ideally suited to a wide range of switching and amplifying applications where very low threshold voltage, high breakdown voltage, high input impedance, low input capacitance, and fast switching speeds are desired.

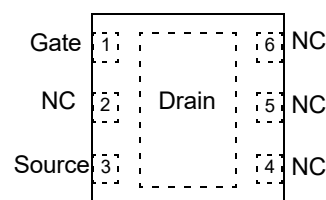
Package Type

3-lead SOT-23
(Top view)



See [Table 3-1](#) for pin information.

6-lead DFN
(Top view)



1.0 ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings^(†)

Drain-to-Source Voltage	BV_{DSS}
Drain-to-Gate Voltage	BV_{DGS}
Gate-to-Source Voltage	$\pm 20V$
Operating Ambient Temperature, T_A	$-55^{\circ}C$ to $+150^{\circ}C$
Storage Temperature, T_S	$-55^{\circ}C$ to $+150^{\circ}C$
ESD Protection (HBM) TN2130MF-G	
Drain-to-Source	± 8 kV
Gate-to-Drain	$-500V$
Gate-to-Source	$< \pm 250V$
ESD Protection (CDM) TN2130MF-G	± 1 kV

† **Notice:** Stresses above those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. This is a stress rating only, and functional operation of the device at those or any other conditions above those indicated in the operational sections of this specification is not intended. Exposure to maximum rating conditions for extended periods may affect device reliability.

DC ELECTRICAL CHARACTERISTICS – COMMERCIAL

Electrical Specifications: $T_A = T_J = 25^{\circ}C$ unless otherwise specified. All DC parameters are 100% tested at $25^{\circ}C$ unless otherwise stated. (Pulse test: 300 μs pulse, 2% duty cycle)

Parameter	Sym.	Min.	Typ.	Max.	Unit	Conditions
Drain-to-Source Breakdown Voltage	BV_{DSS}	300	—	—	V	$V_{GS} = 0V, I_D = 1$ mA
Gate Threshold Voltage	$V_{GS(th)}$	0.8	—	2.4	V	$V_{GS} = V_{DS}, I_D = 1$ mA
Change in $V_{GS(th)}$ with Temperature	$\Delta V_{GS(th)}$	—	—	-5.5	mV/ $^{\circ}C$	$V_{GS} = V_{DS}, I_D = 1$ mA (Note 1)
Gate Body Leakage Current	I_{GSS}	—	—	100	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$
Zero-Gate Voltage Drain Current	I_{DSS}	—	—	10	μA	$V_{GS} = 0V,$ $V_{DS} =$ Maximum rating
		—	—	100	μA	$V_{DS} = 0.8$ Maximum rating, $V_{GS} = 0V, T_A = 125^{\circ}C$ (Note 1)
On-State Drain Current	$I_{D(ON)}$	250	—	—	mA	$V_{GS} = 10V, V_{DS} = 25V$
Static Drain-to-Source On-State Resistance	$R_{DS(ON)}$	—	—	25	Ω	$V_{GS} = 4.5V, I_D = 120$ mA
Change in $R_{DS(ON)}$ with Temperature	$\Delta R_{DS(ON)}$	—	—	1.1	%/ $^{\circ}C$	$V_{GS} = 4.5V, I_D = 120$ mA (Note 1)

Note 1: Specification is obtained by characterization and is not 100% tested.

DC ELECTRICAL CHARACTERISTICS – AUTOMOTIVE

Electrical Specifications: Boldface specification limits apply over the full operating temperature range of $T_A = T_J = -55^{\circ}C, 25^{\circ}C,$ and $150^{\circ}C$ unless otherwise specified. Non-boldfaced specification limits apply only to $T_A = T_J = 25^{\circ}C$ unless otherwise specified. All DC parameters are 100% tested at all three temperatures unless otherwise specified. (Pulse test: 300 μs pulse, 2% duty cycle.)

Parameter	Sym.	Min.	Typ.	Max.	Unit	Conditions
Drain-to-Source Breakdown Voltage	BV_{DSS}	300	—	—	V	$V_{GS} = 0V, I_D = 1$ mA
Gate Threshold Voltage	$V_{GS(th)}$	0.8	—	2.4	V	$V_{GS} = V_{DS}, I_D = 1$ mA
		0.7	—	2.4	V	$V_{DS} = V_{GS}, I_D = 1$ mA
Change in $V_{GS(th)}$ with Temperature	$\Delta V_{GS(th)}$	—	-3.6	—	mV/ $^{\circ}C$	$V_{GS} = V_{DS}, I_D = 1$ mA (Note 1)

Note 1: Specification is obtained by characterization and is not 100% tested.

DC ELECTRICAL CHARACTERISTICS – AUTOMOTIVE (CONTINUED)

Electrical Specifications: Boldface specification limits apply over the full operating temperature range of $T_A = T_J = -55^{\circ}\text{C}$, 25°C , and 150°C unless otherwise specified. Non-boldfaced specification limits apply only to $T_A = T_J = 25^{\circ}\text{C}$ unless otherwise specified. All DC parameters are 100% tested at all three temperatures unless otherwise specified. (Pulse test: 300 μs pulse, 2% duty cycle.)

Parameter	Sym.	Min.	Typ.	Max.	Unit	Conditions
Gate Body Leakage Current	I_{GSS}	—	—	100	nA	$V_{\text{GS}} = \pm 20\text{V}$, $V_{\text{DS}} = 0\text{V}$
		—	—	200	nA	$V_{\text{GS}} = \pm 20\text{V}$, $V_{\text{DS}} = 0\text{V}$
Zero-Gate Voltage Drain Current	I_{DSS}	—	—	10	μA	$V_{\text{GS}} = 0\text{V}$, $V_{\text{DS}} = \text{Maximum rating}$
		—	—	100	μA	$V_{\text{GS}} = 0\text{V}$, $V_{\text{DS}} = \text{Maximum rating}$
On-State Drain Current	$I_{\text{D(ON)}}$	250	—	—	mA	$V_{\text{GS}} = 10\text{V}$, $V_{\text{DS}} = 25\text{V}$
Static Drain-to-Source On-State Resistance	$R_{\text{DS(ON)}}$	—	—	25	Ω	$V_{\text{GS}} = 4.5\text{V}$, $I_{\text{D}} = 120\text{ mA}$
		—	—	66	Ω	$V_{\text{GS}} = 4.5\text{V}$, $I_{\text{D}} = 120\text{ mA}$
Change in $R_{\text{DS(ON)}}$ with Temperature	$\Delta R_{\text{DS(ON)}}$	—	1.1	—	%/ $^{\circ}\text{C}$	$V_{\text{GS}} = 4.5\text{V}$, $I_{\text{D}} = 120\text{ mA}$ (Note 1)

Note 1: Specification is obtained by characterization and is not 100% tested.

AC ELECTRICAL CHARACTERISTICS – COMMERCIAL

Electrical Specifications: $T_A = T_J = 25^{\circ}\text{C}$ unless otherwise specified. Specification is obtained by characterization and is not 100% tested.

Parameter	Sym.	Min.	Typ.	Max.	Unit	Conditions
Forward Transconductance	G _{FS}	—	250	—	mmho	V _{DS} = 25V, I _D = 100 mA
Input Capacitance	C _{ISS}	—	—	50	pF	V _{GS} = 0V, V _{DS} = 25V, f = 1 MHz
Common Source Output Capacitance	C _{OSS}	—	—	15	pF	
Reverse Transfer Capacitance	C _{RSS}	—	—	5	pF	
Turn-On Delay Time	t _{d(ON)}	—	—	10	ns	V _{DD} = 25V, I _D = 120 mA, R _{GEN} = 25Ω
Rise Time	t _r	—	—	7	ns	
Turn-Off Delay Time	t _{d(OFF)}	—	—	12	ns	
Fall Time	t _f	—	—	15	ns	
DIODE PARAMETER						
Diode Forward Voltage Drop	V _{SD}	—	—	1.8	V	V _{GS} = 0V, I _{SD} = 120 mA (Note 1)
Reverse Recovery Time	t _{rr}	—	400	—	ns	V _{GS} = 0V, I _{SD} = 120 mA

Note 1: All DC parameters are 100% tested at 25°C unless otherwise stated.
(Pulse test: 300 μs pulse, 2% duty cycle)

AC ELECTRICAL CHARACTERISTICS – AUTOMOTIVE

Electrical Specifications: $T_A = 25^{\circ}\text{C}$ unless otherwise specified. All AC parameters are sample tested.

Parameter	Sym.	Min.	Typ.	Max.	Unit	Conditions
Forward Transconductance	G_{FS}	—	205	—	mmho	$V_{\text{DS}} = 25\text{V}$, $I_{\text{D}} = 100\text{ mA}$
Input Capacitance	C_{ISS}	—	29	—	pF	$V_{\text{GS}} = 0\text{V}$, $V_{\text{DS}} = 25\text{V}$, $f = 1\text{ MHz}$
Common Source Output Capacitance	C_{OSS}	—	6	—	pF	
Reverse Transfer Capacitance	C_{RSS}	—	1.2	—	pF	

Note 1: 100% Production Tested at $T_A = T_J = (-55^{\circ}\text{C}, 25^{\circ}\text{C}, \text{ and } 150^{\circ}\text{C})$.

AC ELECTRICAL CHARACTERISTICS – AUTOMOTIVE (CONTINUED)

Electrical Specifications: T _A = 25°C unless otherwise specified. All AC parameters are sample tested.						
Parameter	Sym.	Min.	Typ.	Max.	Unit	Conditions
Turn-On Delay Time	t _{d(ON)}	—	6.8	—	ns	V _{DD} = 25V, I _D = 120 mA, R _{GEN} = 25Ω
Rise Time	t _r	—	3	—	ns	
Turn-Off Delay Time	t _{d(OFF)}	—	12	—	ns	
Fall Time	t _f	—	7	—	ns	
DIODE PARAMETER						
Diode Forward Voltage Drop	V _{SD}	—	—	1.8	V	V _{GS} = 0V, I _{SD} = 120 mA (Note 1)
Reverse Recovery Time	t _{rr}	—	450	—	ns	V _{GS} = 0V, I _{SD} = 120 mA

Note 1: 100% Production Tested at $T_A = T_J = (-55^\circ\text{C}, 25^\circ\text{C}, \text{ and } 150^\circ\text{C})$.

TEMPERATURE SPECIFICATIONS

Parameter	Sym.	Min.	Typ.	Max.	Unit	Conditions
TEMPERATURE RANGE						
Operating Ambient Temperature	T_A	-55	—	+150	$^\circ\text{C}$	
Storage Temperature	T_S	-55	—	+150	$^\circ\text{C}$	
PACKAGE THERMAL RESISTANCE						
3-lead SOT-23	θ_{JA}	—	203	—	$^\circ\text{C/W}$	
6-lead DFN	θ_{JA}	—	102	—	$^\circ\text{C/W}$	

THERMAL CHARACTERISTICS

Package	I_D (Note 1) (Continuous) (mA)	I_D (Pulsed) (mA)	Power Dissipation at $T_A = 25^\circ\text{C}$ (W)	I_{DR} (Note 1) (mA)	I_{DRM} (mA)
3-lead SOT-23	85	200	0.36	85	200

Note 1: I_D (continuous) is limited by maximum rated T_J .

2.0 TYPICAL PERFORMANCE CURVES

The graphs and tables provided following this note are a statistical summary based on a limited number of samples and are provided for informational purposes only. The performance characteristics listed herein are not tested or guaranteed. In some graphs or tables, the data presented may be outside the specified operating range (e.g. outside specified power supply range) and therefore outside the warranted range.

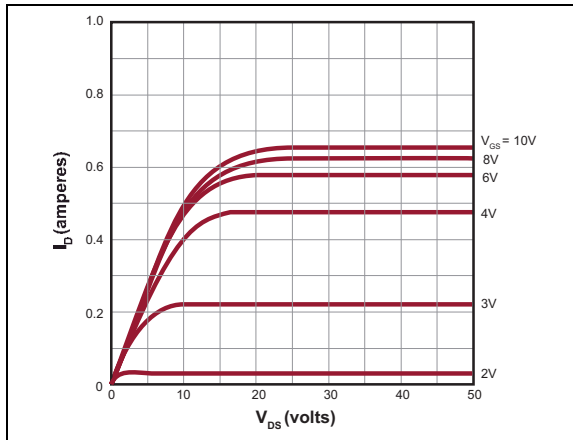


FIGURE 2-1: Output Characteristics.

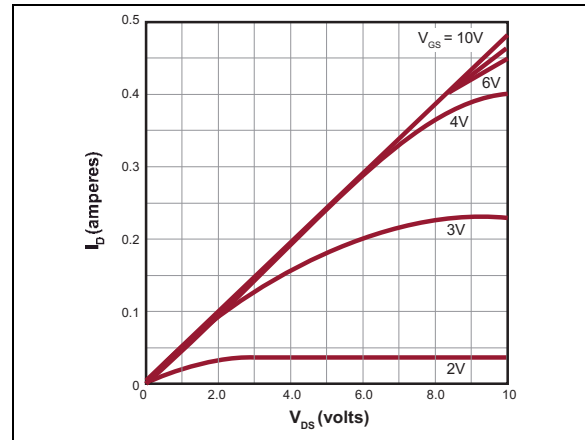


FIGURE 2-4: Saturation Characteristics.

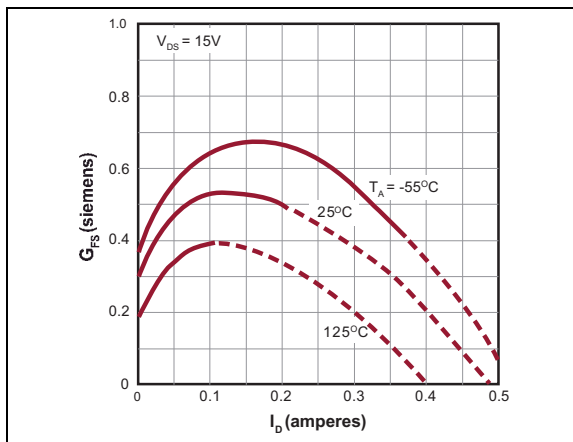


FIGURE 2-2: Transconductance vs. Drain Current.

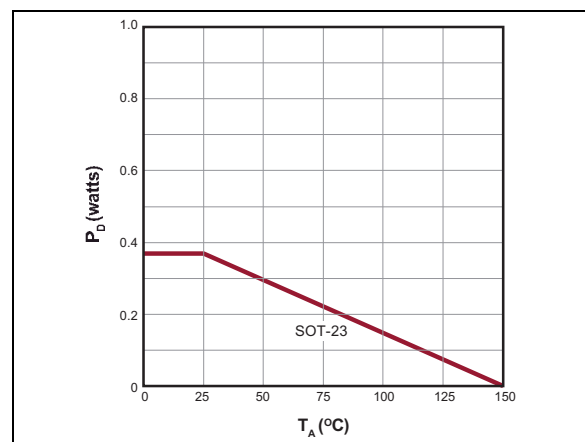


FIGURE 2-5: Power Dissipation vs. Case Temperature.

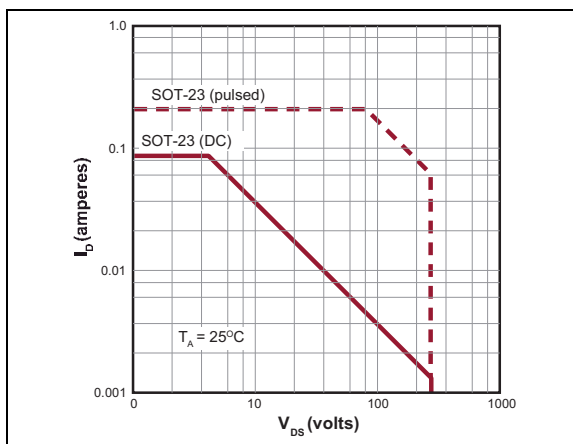


FIGURE 2-3: Maximum Rated Safe Operating Area.

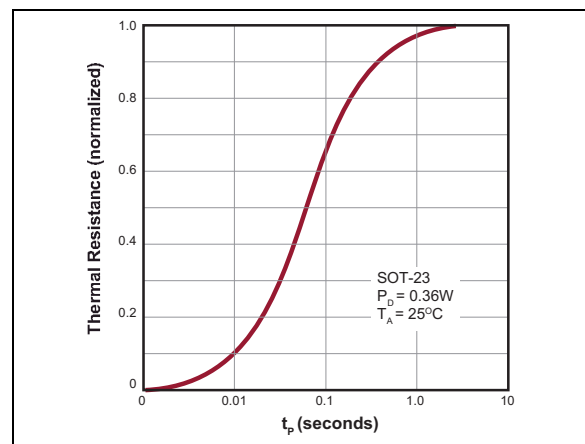


FIGURE 2-6: Thermal Response Characteristics.

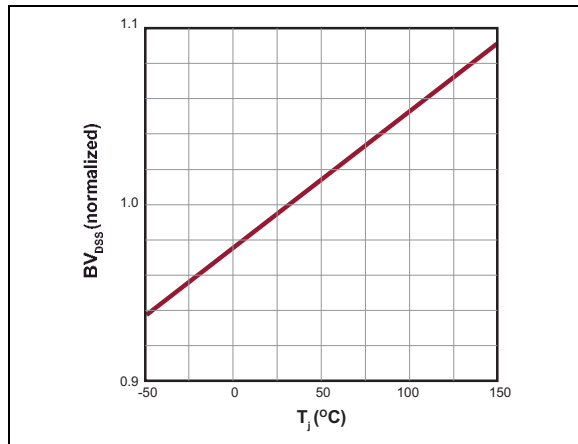


FIGURE 2-7: BV_{DSS} Variation with Temperature.

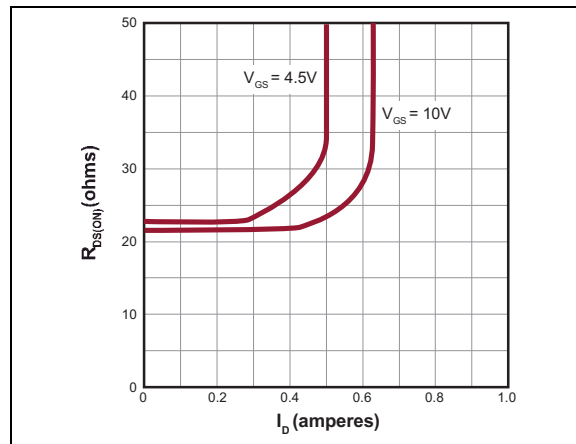


FIGURE 2-10: On-Resistance vs. Drain Current.

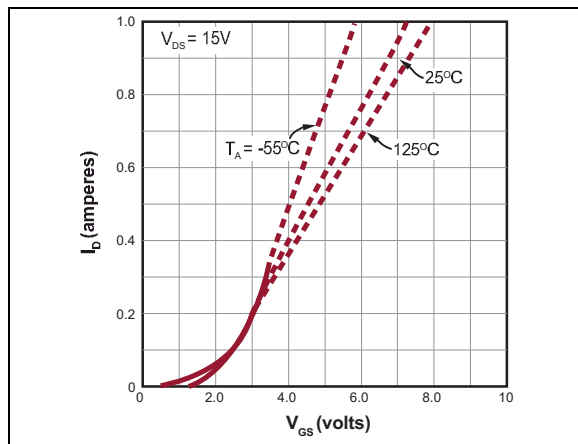


FIGURE 2-8: Transfer Characteristics.

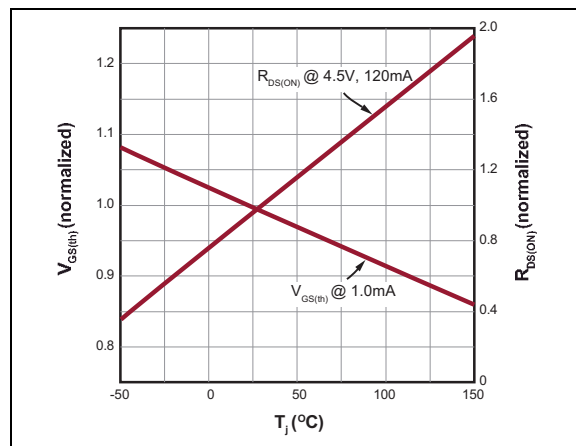


FIGURE 2-11: $V_{GS(th)}$ and R_{DS} Variation with Temperature.

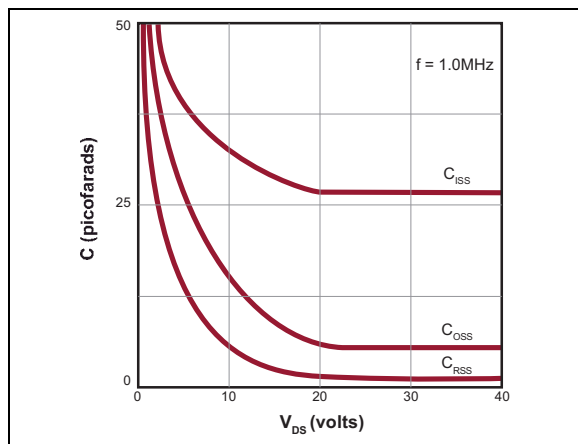


FIGURE 2-9: Capacitance vs Drain-to-Source Voltage.

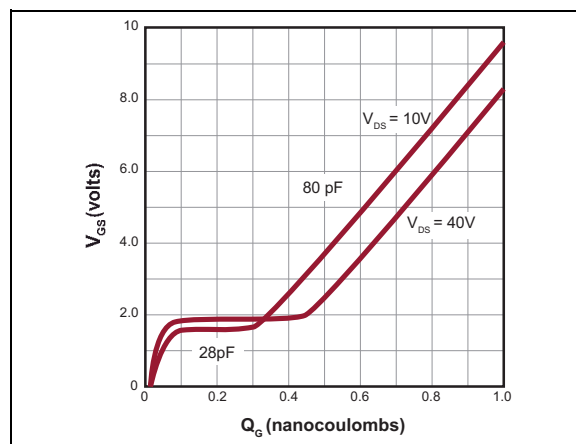


FIGURE 2-12: Gate Drive Dynamic Characteristics.

3.0 PIN DESCRIPTION

The details on the pins of TN2130 are listed in [Table 3-1](#). Refer to [Package Type](#) for the location of pins.

TABLE 3-1: PIN FUNCTION TABLE

Pin Number		Name	Description
SOT-23	DFN		
1	1	Gate	Gate
2	3	Source	Source
3	4,5,6	NC	Not Connected. Recommended to connect to Drain.
—	2	NC	Not Connected.
—	Exposed Pad	Drain	Drain

4.0 FUNCTIONAL DESCRIPTION

Figure 4-1 illustrates the switching waveforms and test circuit for TN2130.

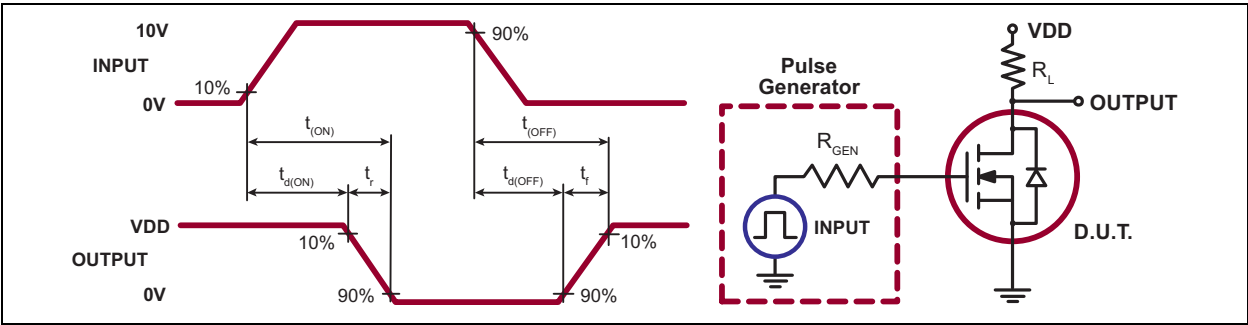


FIGURE 4-1: Switching Waveforms and Test Circuit.

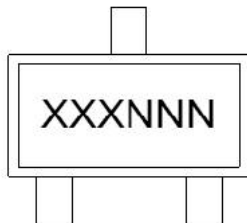
TABLE 4-1: PRODUCT SUMMARY

BV_{DSS}/BV_{DGS} (V)	$R_{DS(ON)}$ (Maximum) (Ω)	$V_{GS(th)}$ (Maximum) (V)
300	25	2.4

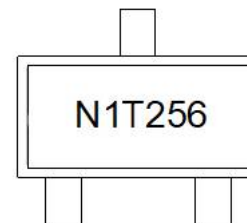
5.0 PACKAGING INFORMATION

5.1 Package Marking Information

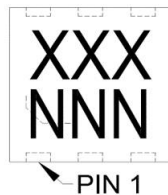
3-Lead SOT-23
(2.90 mm X 1.30 mm)



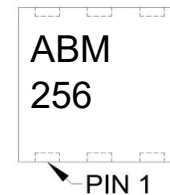
Example



6-Lead DFN
(2.00 mm X 2.00 mm)



Example

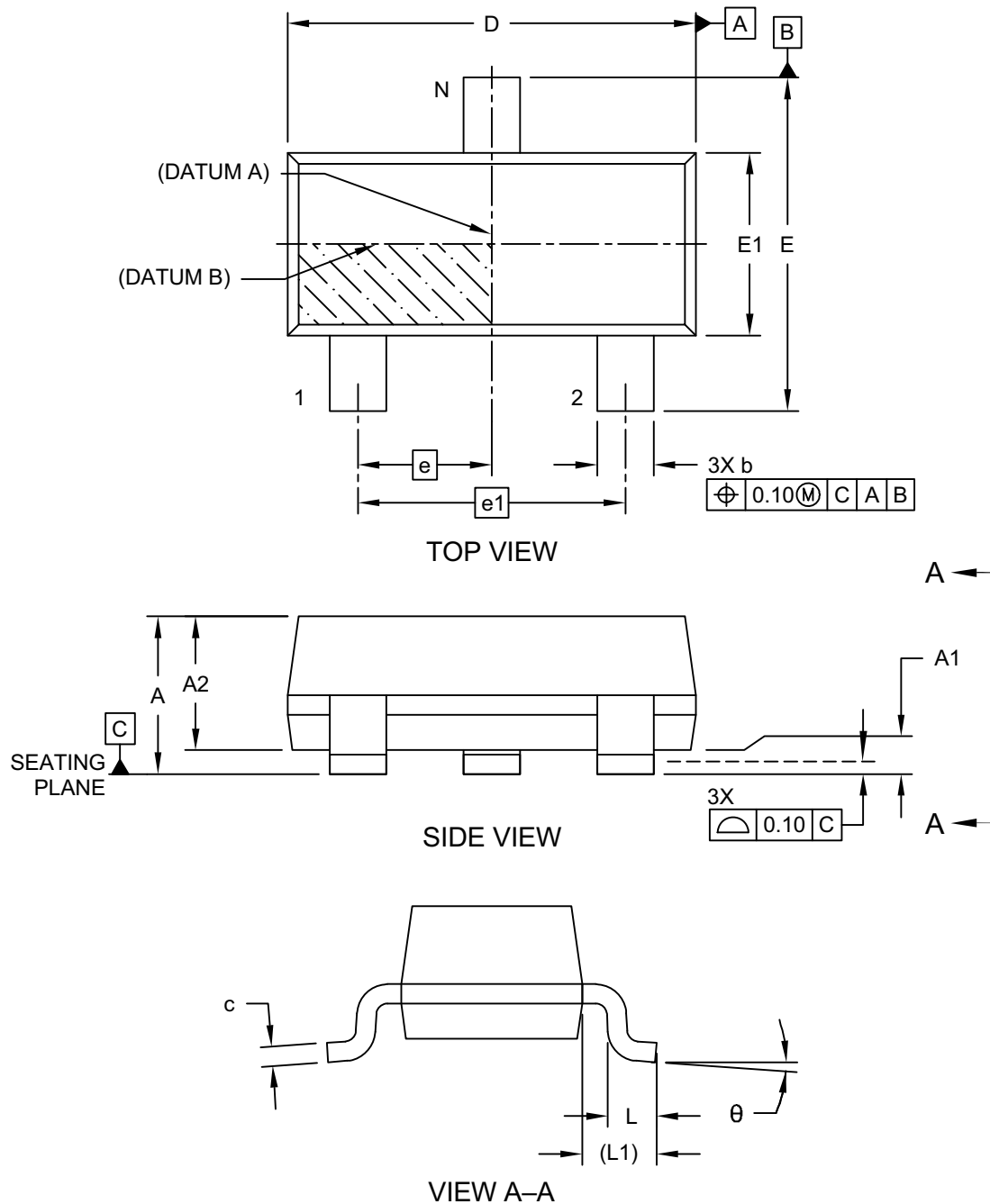


Legend:	XX...X	Product Code or Customer-specific information
	Y	Year code (last digit of calendar year)
	YY	Year code (last 2 digits of calendar year)
	WW	Week code (week of January 1 is week '01')
	NNN	Alphanumeric traceability code
	(e3)	Pb-free JEDEC designator for Matte Tin (Sn)
	*	This package is Pb-free. The Pb-free JEDEC designator (e3) can be found on the outer packaging for this package.

Note: In the event the full Microchip part number cannot be marked on one line, it will be carried over to the next line, thus limiting the number of available characters for customer-specific information. Package may or not include the corporate logo.

3-Lead Small Outline Transistor (C6X) - [SOT-23] Supertex Legacy Package (K1/T)

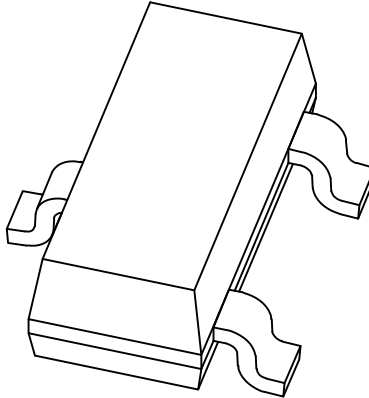
Note: For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>



Microchip Technology Drawing C04-17458 Rev A Sheet 1 of 2

3-Lead Small Outline Transistor (C6X) - [SOT-23] Supertex Legacy Package (K1/T)

Note: For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>



		Units	MILLIMETERS		
Dimension Limits			MIN	NOM	MAX
Number of Terminals	N		3		
Pitch	e		0.95 BSC		
Overall Pitch	e1		1.90 BSC		
Overall Height	A		0.89	–	1.12
Standoff	A1		0.01	–	0.10
Molded Package Thickness	A2		0.88	0.95	1.02
Overall Length	D		2.80	2.90	3.04
Overall Width	E		2.10	–	2.64
Molded Package Width	E1		1.20	1.30	1.40
Terminal Width	b		0.30	–	0.50
Terminal Thickness	c		0.08	–	0.20
Terminal Length	L		0.20	0.50	0.60
Footprint	L1		0.54 REF		
Foot Angle	θ		0°	–	8°

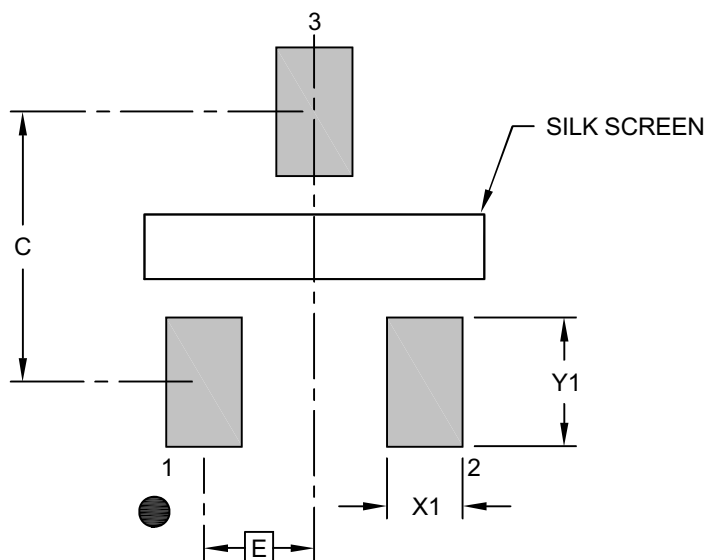
Notes:

- Pin 1 visual index feature may vary, but must be located within the hatched area.
- Dimensioning and tolerancing per ASME Y14.5M
BSC: Basic Dimension. Theoretically exact value shown without tolerances.
REF: Reference Dimension, usually without tolerance, for information purposes only.

Microchip Technology Drawing C04-17458 Rev A Sheet 2 of 2

3-Lead Small Outline Transistor (C6X) - [SOT-23] Supertex Legacy Package (K1/T)

Note: For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>



RECOMMENDED LAND PATTERN

Dimension Limits	Units	MILLIMETERS		
		MIN	NOM	MAX
Contact Pitch	E	0.95 BSC		
Contact Pad Spacing	C		2.30	
Contact Pad Width (X3)	X1			0.65
Contact Pad Length (X3)	Y1			1.10

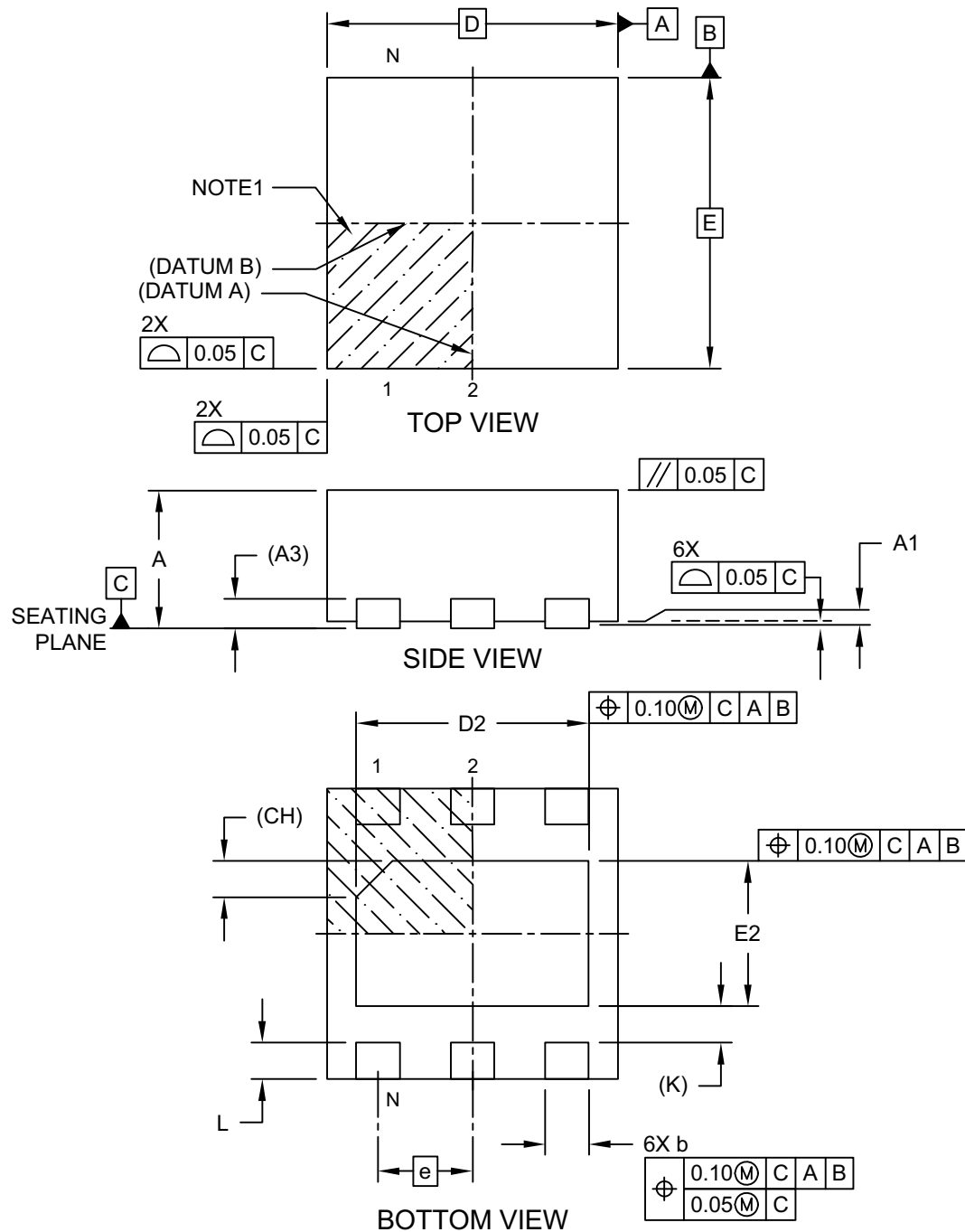
Notes:

1. Dimensioning and tolerancing per ASME Y14.5M
BSC: Basic Dimension. Theoretically exact value shown without tolerances.
2. For best soldering results, thermal vias, if used, should be filled or tented to avoid solder loss during reflow process

Microchip Technology Drawing C04-19458 Rev A

6-Lead Plastic Dual Flat, No Lead Package (7AX) - 2x2x0.9 mm Body [DFN]

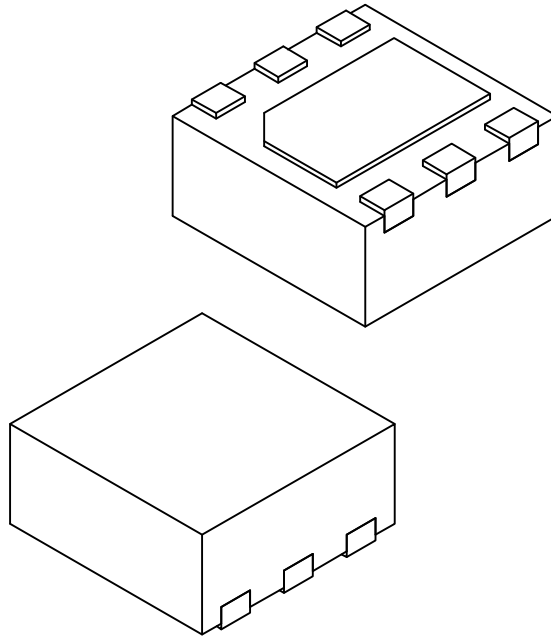
Note: For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>



Microchip Technology Drawing C04-120-7AX Rev D Sheet 1 of 2

6-Lead Plastic Dual Flat, No Lead Package (7AX) - 2x2x0.9 mm Body [DFN]

Note: For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>



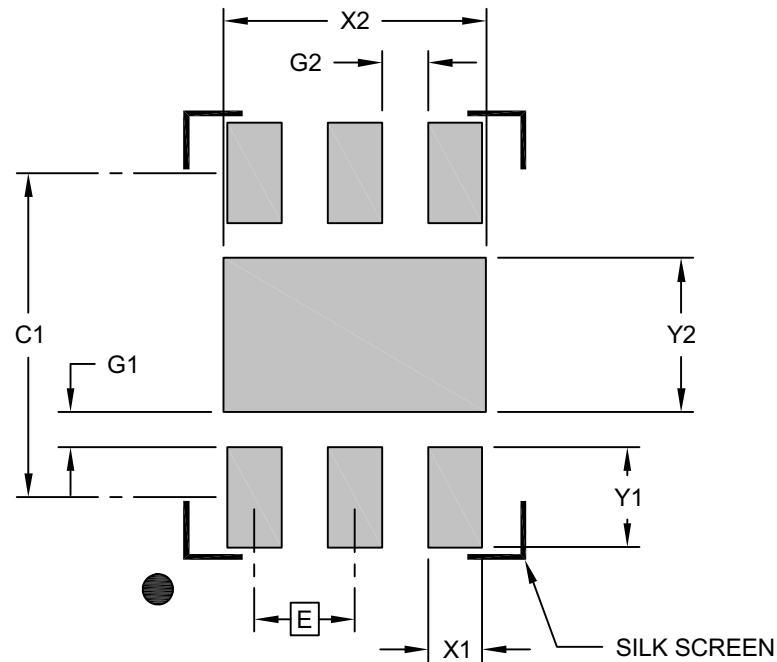
Units		MILLIMETERS		
Dimension Limits		MIN	NOM	MAX
Number of Terminals	N	6		
Pitch	e	0.65 BSC		
Overall Height	A	0.80	0.87	0.95
Standoff	A1	0.00	0.02	0.05
Terminal Thickness	A3	0.203 REF		
Overall Length	D	2.00 BSC		
Exposed Pad Length	D2	1.50	1.60	1.70
Overall Width	E	2.00 BSC		
Exposed Pad Width	E2	0.90	1.00	1.10
Chamfer	CH	0.25 REF		
Terminal Width	b	0.25	0.30	0.35
Terminal Length	L	0.20	0.25	0.30
Terminal-to-Exposed-Pad	K	0.25 REF		

Notes:

- Pin 1 visual index feature may vary, but must be located within the hatched area.
- Package is saw singulated
- Dimensioning and tolerancing per ASME Y14.5M
 - BSC: Basic Dimension. Theoretically exact value shown without tolerances.
 - REF: Reference Dimension, usually without tolerance, for information purposes only.

6-Lead Plastic Dual Flat, No Lead Package (7AX) - 2x2x0.9 mm Body [DFN]

Note: For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>



RECOMMENDED LAND PATTERN

		Units	MILLIMETERS		
Dimension Limits			MIN	NOM	MAX
Contact Pitch	E		0.65 BSC		
Center Pad Width	X2				1.70
Center Pad Length	Y2				1.00
Contact Pad Spacing	C1			1.70	
Contact Pad Width (X6)	X1				0.35
Contact Pad Length (X6)	Y1				0.65
Contact Pad to Center Pad (X6)	G1		0.20		
Contact Pad to Contact Pad (X4)	G2		0.25		

Notes:

- Dimensioning and tolerancing per ASME Y14.5M
BSC: Basic Dimension. Theoretically exact value shown without tolerances.
- For best soldering results, thermal vias, if used, should be filled or tented to avoid solder loss during reflow process

Microchip Technology Drawing C04-2120-7AX Rev D

NOTES:

APPENDIX A: REVISION HISTORY

Revision D (March 2023)

- Added 6-Lead DFN package to [Package Type](#), [Pin Function Table](#) and [Product Identification System](#).
- Updated [Absolute Maximum Ratings](#)^(†).
- Updated [Section 5.1, Package Marking Information](#).
- Made minor text changes throughout the document.

Revision C (March 2022)

- Updated tables [DC Electrical Characteristics – Automotive](#) and [AC Electrical Characteristics – Automotive](#).
- Updated [Section 5.1, Package Marking Information](#).
- Updated [Product Identification System](#) format.
- Updated legal and contact information.

Revision B (June 2020)

- Added automotive specifications to the Electrical Characteristics section.
- Added automotive specifications to the Product Information System section.
- Made minor text changes throughout the document.

Revision A (April 2019)

- Converted Supertex Doc# DSFP-TN2130 to Microchip DS20005944A.
- Changed the package marking format.
- Made minor text changes throughout the document.

NOTES:

TN2130

PRODUCT IDENTIFICATION SYSTEM

To order or obtain information, e.g., on pricing or delivery, contact your local Microchip representative or sales office.

<u>PART NO.</u>	<u>XX</u>	<u>-X</u>	<u>-XXX</u>																										
Device	Package	Environmental	Qualification																										
<table><tr><td>Device:</td><td colspan="3">TN2130: N-Channel Enhancement-Mode Vertical DMOS FET</td></tr><tr><td rowspan="2">Package:</td><td>K1</td><td colspan="2">= 3-lead SOT-23</td></tr><tr><td>MF</td><td colspan="2">= 6-Lead DFN</td></tr><tr><td>Environmental:</td><td>G</td><td colspan="2">= Lead (Pb)-free/RoHS-compliant Package</td></tr><tr><td>Media Type:</td><td>(Blank)</td><td colspan="2">= 3000/Reel for both K1 and MF Packages</td></tr><tr><td rowspan="2">Qualification:</td><td>(Blank)</td><td colspan="2">= Standard Part</td></tr><tr><td>VAO</td><td colspan="2">= Automotive AEC-Q100 Qualified</td></tr></table>				Device:	TN2130: N-Channel Enhancement-Mode Vertical DMOS FET			Package:	K1	= 3-lead SOT-23		MF	= 6-Lead DFN		Environmental:	G	= Lead (Pb)-free/RoHS-compliant Package		Media Type:	(Blank)	= 3000/Reel for both K1 and MF Packages		Qualification:	(Blank)	= Standard Part		VAO	= Automotive AEC-Q100 Qualified	
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	VAO	= Automotive AEC-Q100 Qualified																											
Examples: <table><tr><td>a) TN2130K1-G:</td><td>N-Channel Enhancement-Mode, Vertical DMOS FET, 3-lead SOT-23 package, 3000/Reel</td></tr><tr><td>b) TN2130K1-G-VAO:</td><td>N-Channel Enhancement-Mode Vertical DMOS FET, 3-lead SOT-23 package, 3000/Reel, Automotive Grade</td></tr><tr><td>c) TN2130MF-G-VAO:</td><td>N-Channel Enhancement-Mode Vertical DMOS FET, 6-lead DFN package, 3000/Reel, Automotive Grade</td></tr><tr><td>d) TN2130MF-G:</td><td>N-Channel Enhancement-Mode Vertical DMOS FET, 6-Lead DFN package, 3000/Reel</td></tr></table>				a) TN2130K1-G:	N-Channel Enhancement-Mode, Vertical DMOS FET, 3-lead SOT-23 package, 3000/Reel	b) TN2130K1-G-VAO:	N-Channel Enhancement-Mode Vertical DMOS FET, 3-lead SOT-23 package, 3000/Reel, Automotive Grade	c) TN2130MF-G-VAO:	N-Channel Enhancement-Mode Vertical DMOS FET, 6-lead DFN package, 3000/Reel, Automotive Grade	d) TN2130MF-G:	N-Channel Enhancement-Mode Vertical DMOS FET, 6-Lead DFN package, 3000/Reel																		
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