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ISL Types

PREFIX	ISL	X	XXXX	X	I	XX	X	XXX	Z	-T	SUFFIX/ POST PROCESSING/ SPECIAL SERVICES
										PB-FREE OPTION Z: ROHS and IEC61249-2-21 Halogen Free	SPECIAL SELECTIONS Optional Characters to Denote Operating Conditions or Package Options: 18: 1.8V 33: 3.3V EP: Enhanced Product (DLA Vendor Item Drawing) EPZ: Enhanced Product w/100% Matte Tin Lead Finish A, B etc.: Firmware revision. This will not appear on part marking
										OPTIONAL ELECTRICAL GRADE To Denote Speed or Precision Grading as Defined in Datasheet	SPECIAL SERVICES -T: Tape and Reel -T1: Tape and Reel -T2: Tape and Reel w/Vacuum Pack -T7: 7" Reel -TS: 7" Reel, 100pc. -T7A: 7" Reel, 250pc. -T13: 13" Reel -T5: 500pc Tape and Reel -TK: 1,000pc Tape and Reel -T5K: 5,000pc Tape and Reel -EV: Evaluation Board -EVZ: Evaluation Board ROHS Compliant -DM: Demo Board -DMZ: Demo Board ROHS Compliant -RF: Ref Design Eval Board -RFZ: Ref Design Eval Board ROHS Compliant -EC: Enhanced Commercial (Enhanced EOL, MIL-PRF-38535 Change Notice, Traceable to Wafer Lot)
										PACKAGE DESIGNATOR A: Shrink Small Outline Plastic (SSOP/QSOP) AR: Quad Flat No-Lead (Punch QFN with Wettable Flank) B: Small Outline Plastic (SOIC) BE: Exposed Pad SOIC (EPSOIC) C: Available D: Ceramic Dual-In-Line Metal Seal (SBDIP) E: Small Outline Transistor Plastic (SC-70) F: Ceramic Flatpack FE: Ceramic Flatpack w/Heatsink G: Single In-line Plastic (SIP) TO-220 GS: Single In-line Plastic, Surface Mount (SIP) TO-263 H: Small Outline Transistor Plastic (SOT-23) HT: Thin Small Outline Transistor Plastic (TSOT) I: Chip Scale Package (CSP) J: Ceramic Dual-In-Line Frit Seal (CERDIP) K: Ball Grid Array (FBGA/PBGA/LGA) KE: Heat Sink Ball Grid Array (HBGA) KV: Very Thin Fine Pitch BGA (VFPGA) L: Ceramic Leadless Chip Carrier (CLCC, SMD 0.5) M: Plastic Leaded Chip Carrier (PLCC) N: Thin Plastic Quad Flatpack (TQFP/LQFP) NE: Thin Plastic Quad Flatpack (TQFP/LQFP w/Exposed Pad) O: Do Not Use P: Dual-In-Line Plastic (PDIP) Q: Metric Plastic Quad Flatpack (MQFP/PQFP) R: Quad/Dual Flat No Lead (QFN/DFN)/HDA (High Density Array) RA: Array Flat No Lead (AFN) RO: Optical Quad/Dual Flat No Lead (OQFN/ODFN) ROM: Optical Quad/Dual Flat No Lead Module RT: Thin Quad/Dual Flat No Lead (TQFN/TDFN) RU: Ultra Thin Quad/Dual Flat No Lead (UTQFN/UTDFN/ePad UTQFN) RS: Top Exposed Pad QFN (TEPQFN) RX: Extreme Thin Flat No Lead (X2DFN/X2QFN) S: Header (TO-257) T: Metal Can (TO-39) U: Mini Small Outline Package (MSOP) UE: Thermally Enhanced Mini Small Outline Package (HMSOP) UO: Optical Mini Small Outline Package (OSOP) V: THIN Shrink Small Outline Plastic (TSSOP) VE: Thermally Enhanced Thin Shrink Small Outline Plastic (HTSSOP/EPTSSOP) W: Wafer Sale WMB: Wafer Sale With Solderable Metal Backing Layer XM: Die Sale, Military Visual (Condition B) XC: Die Sale, Commercial Visual XB: Die Sale, Bumped Die (FCP) Y: Available Z: Do Not Use	
										FAMILY DESIGNATOR 1: DSL, RTC, Clocks, ATE, Energy LED Lighting 2: Reference, DCPs, Buffers, Sensors, Precision Op Amp, Precision ADC & DAC 3: Interface, Data Communication 4: Analog Component Solutions 5: High Speed Amps, Switch/MUX, ADCs, DACs, Optical, Video, Telecom VoIP, DSP Function Specific 6: Desktop Power 7: Space, Auto 8: Analog Switches, General Purpose Power 9: Notebook, Handheld A: High Speed ADCs	
										TEMPERATURE RANGE C: 0°C to +70°C (Commercial) D: 0°C to +85°C H: -10°C to +100°C (Hi-Temp Comm.) E: -20°C to +85°C (Extended Comm.) I: -40°C to +85°C (Industrial) A: -40°C to +105°C (Automotive) F: -40°C to +125°C (Full-range Industrial) P: -40°C to +130°C (Power Supply) M: -55°C to +125°C (Military) RHV: QML Class V (Radiation Hardened) RHQ: QML Class Q (Radiation Hardened) RHT: QML Class T (Radiation Hardened) EHV: QML Class V (Radiation Hardened) EHQ: QML Class Q (Radiation Hardened) EHT: QML Class T (Radiation Hardened)	
										PART NUMBER 3 to 5 Digits	
										OPTION E: 15kV ESD Protected DCP Resistance Options W: 10k U: 50k T: 100k	

EL Types

EL **1503** **A** **I** **R** **Z** **-T**

PREFIX ——— |

PART NUMBER ——— |

OPTIONAL SUFFIX OR PART VARIATION ——— |

TEMPERATURE RANGE ——— |

PACKAGE FAMILY ——— |

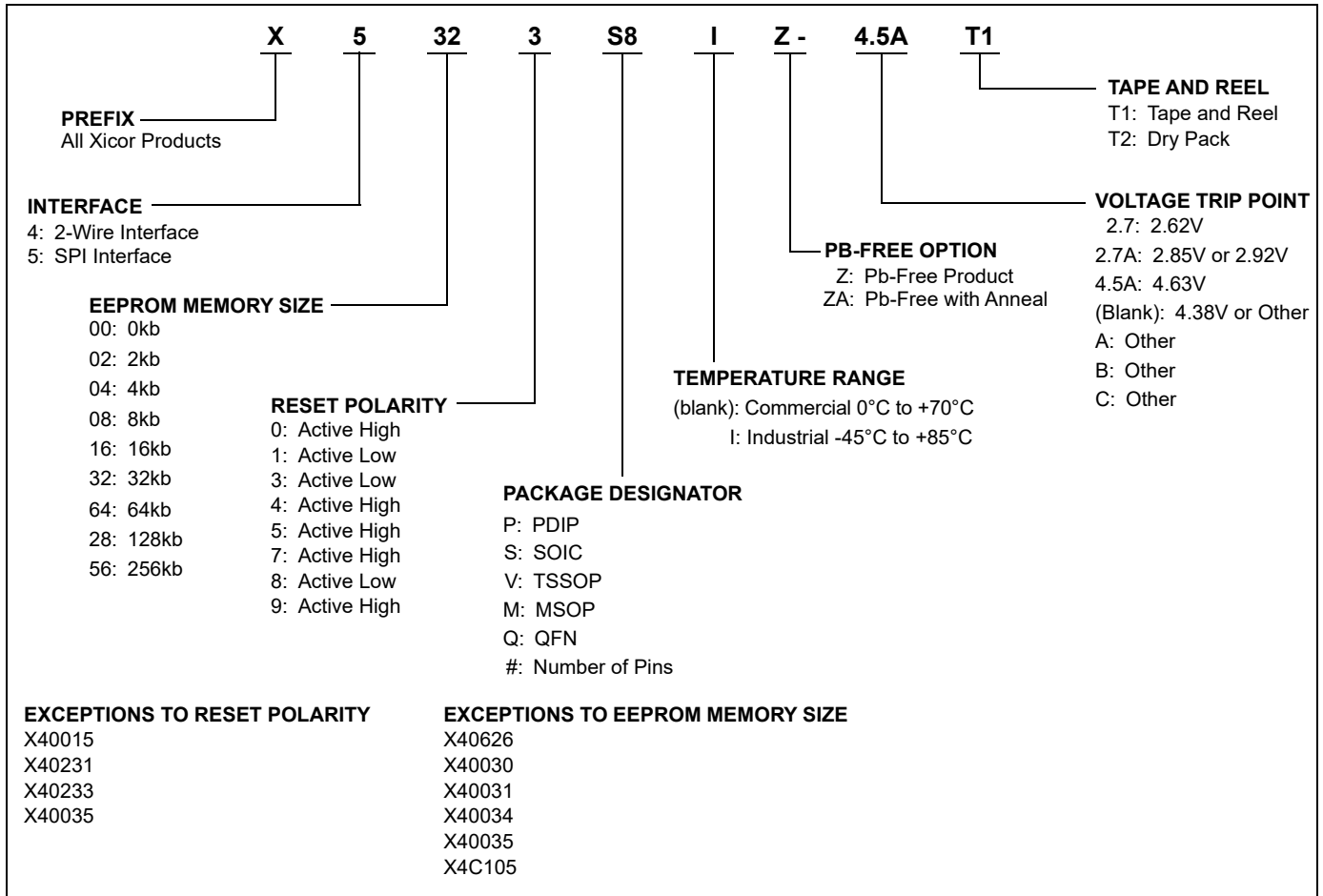
PB-FREE OPTION
Z: Pb-Free Product

SUFFIX/POST PROCESSING/SPECIAL SERVICES
-T: Tape and Reel
-T7: 7" Reel
-T7A: 7" Reel (250 pcs)
-T13: 13" Reel

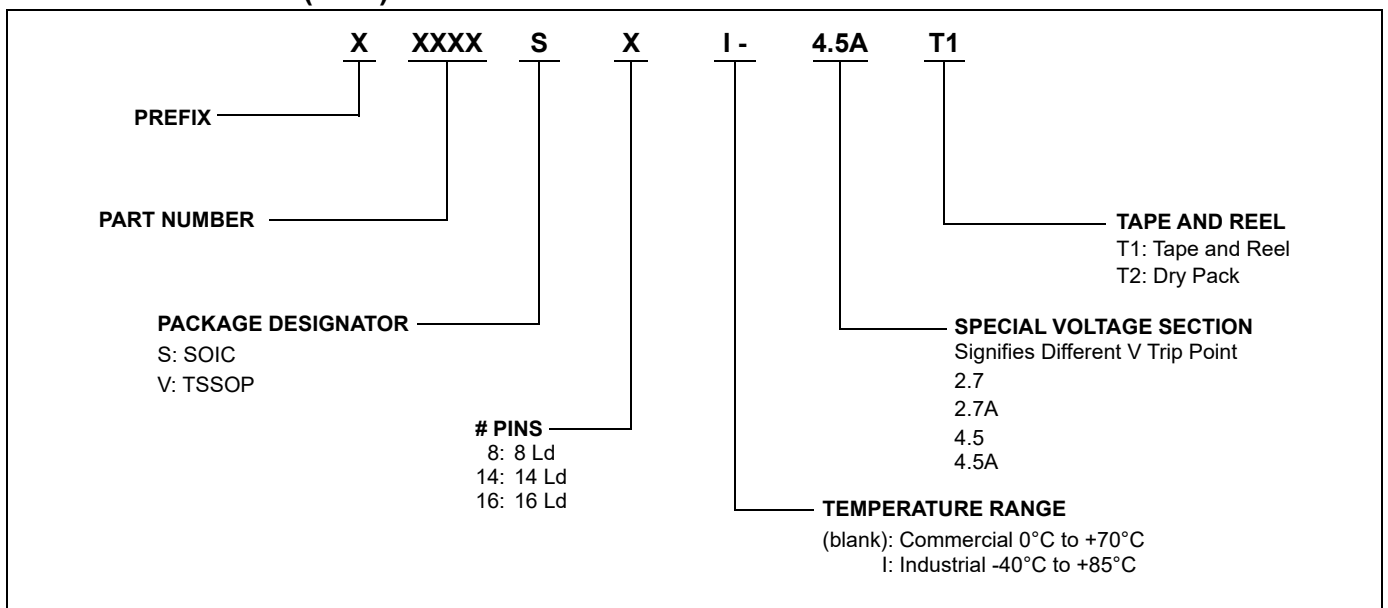
PACKAGE TYPE	PACKAGE DESIGNATOR
Bare Die	D
CerDip	J
QFN/DFN (Saw Singulate)	L
SO (0.300") and HSOP	M
PDIP	N
TSSOP (4.4 mm)	R
HTSSOP (4.4 mm)	RE
SO (0.150")	S
TO-220	T
QSOP	U
SOT-23	W
MSOP	Y
HMSOP	YE
TSOT	WT
SC-70	C

X Types

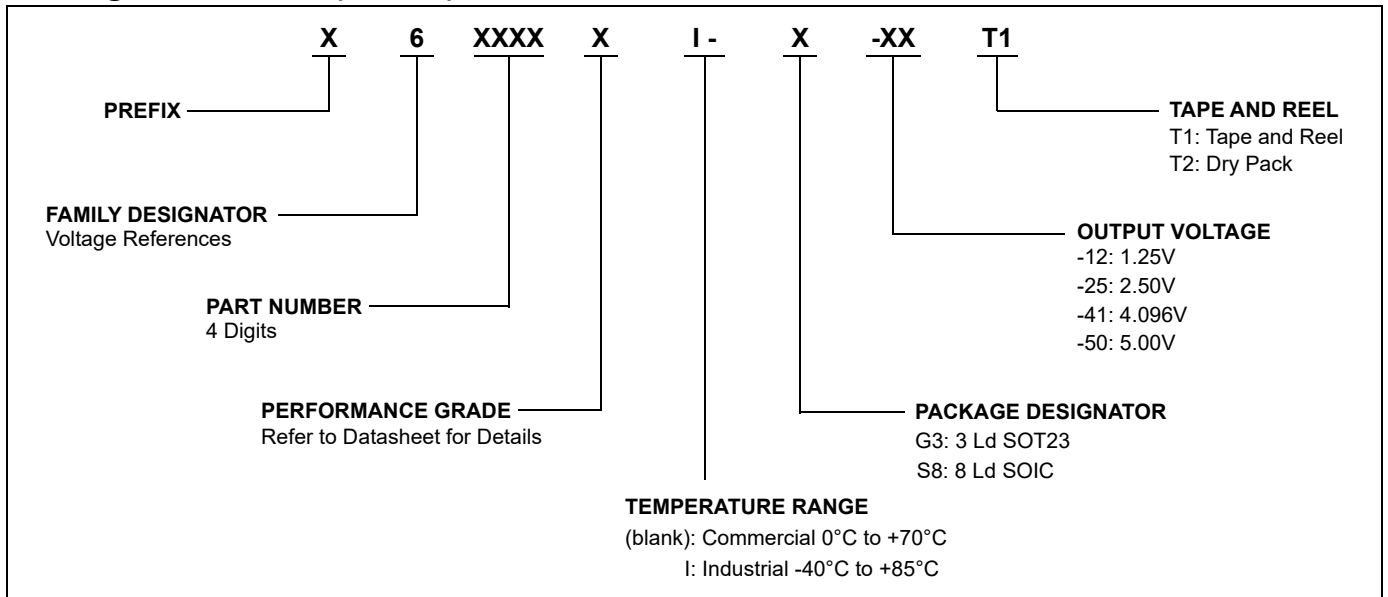
System Management Products (SMP)



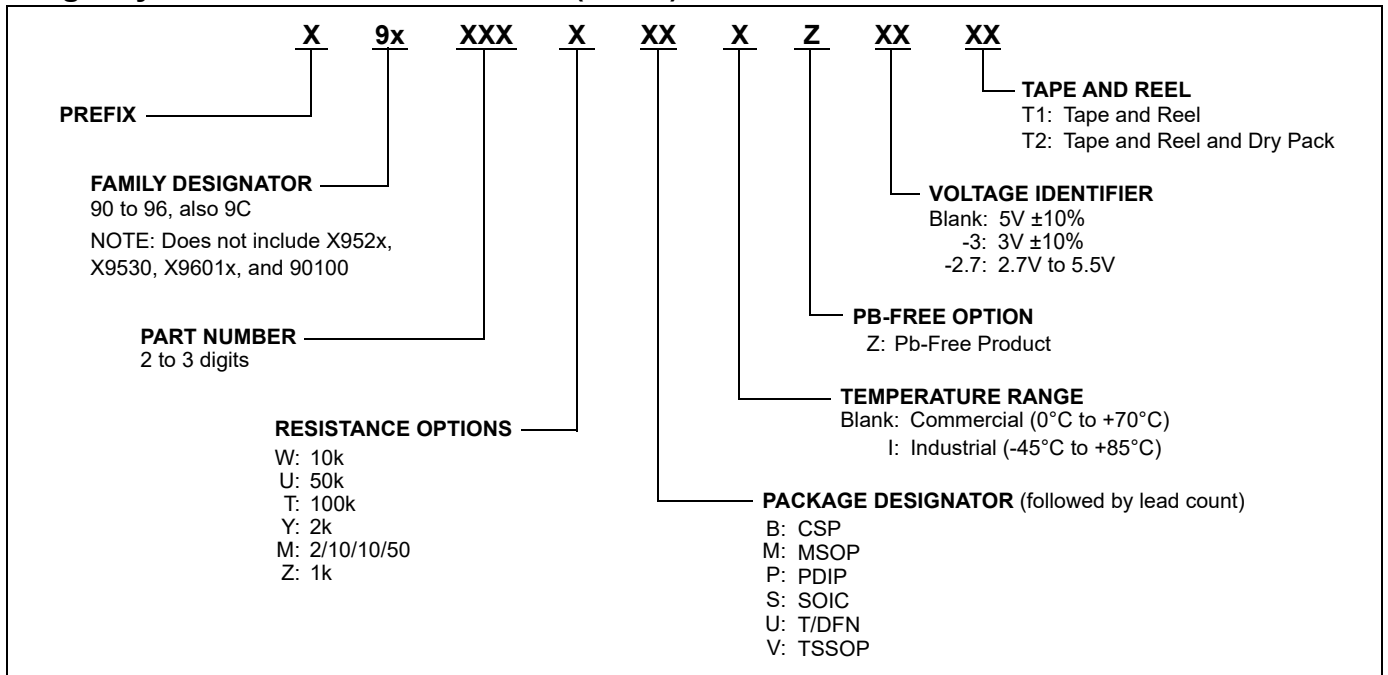
Real Time Clocks (RTC)



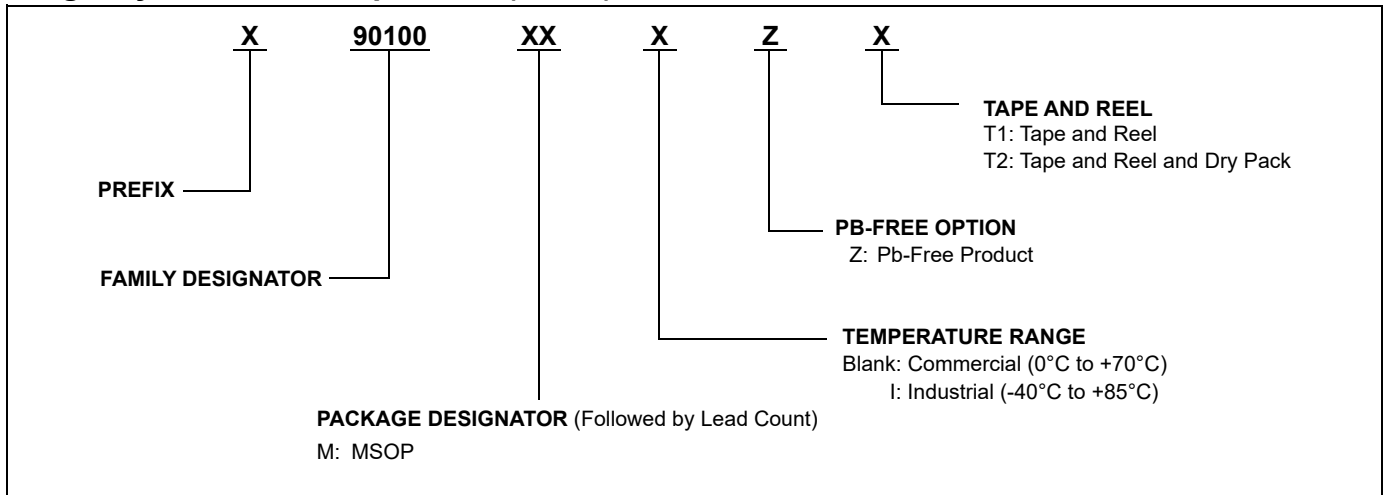
Voltage References (VREFs)



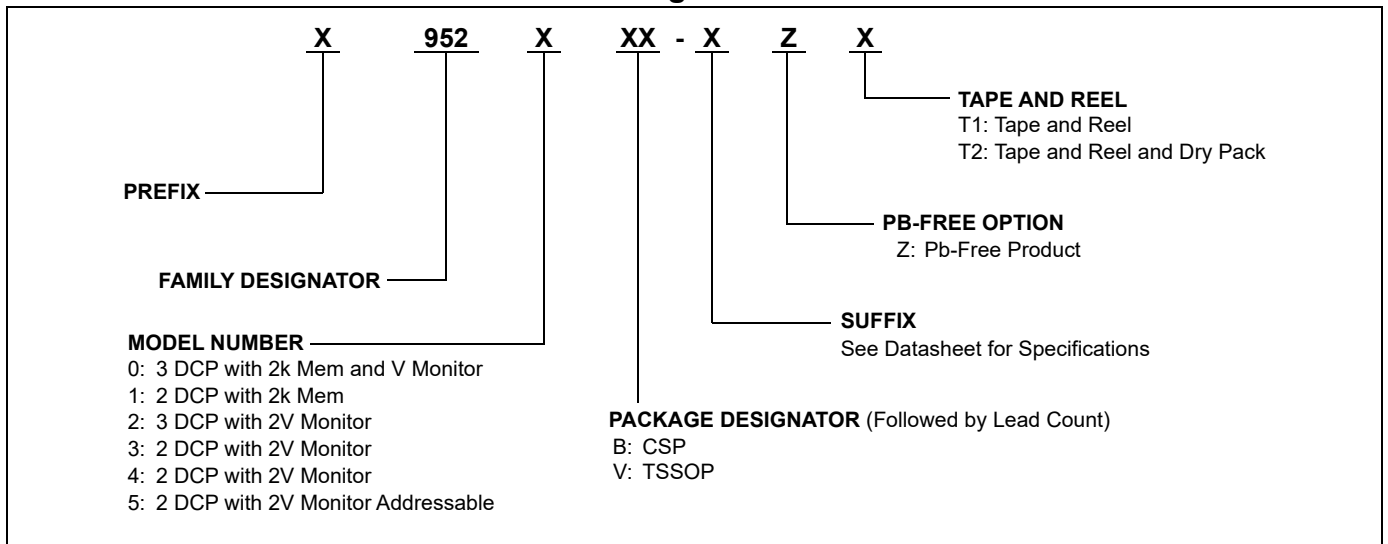
Digitally Controlled Potentiometers (DCPs)



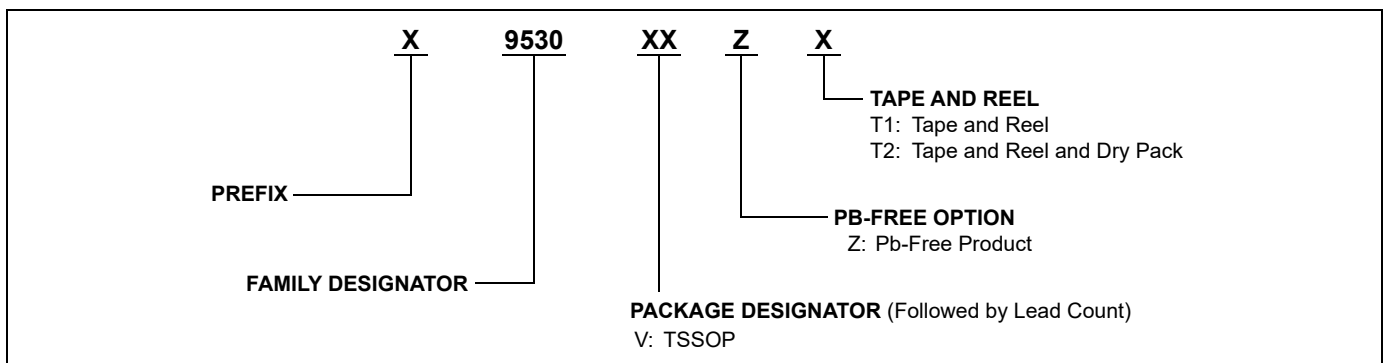
Digitally Controlled Capacitors (DCCs)



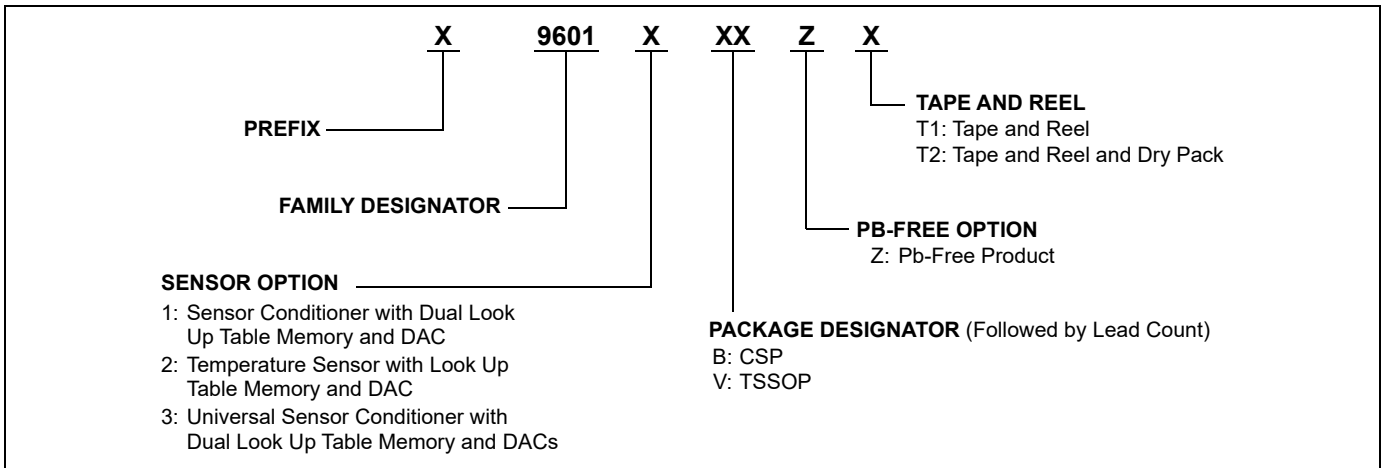
Bias and Control for Laser Diode with Integrated DCP



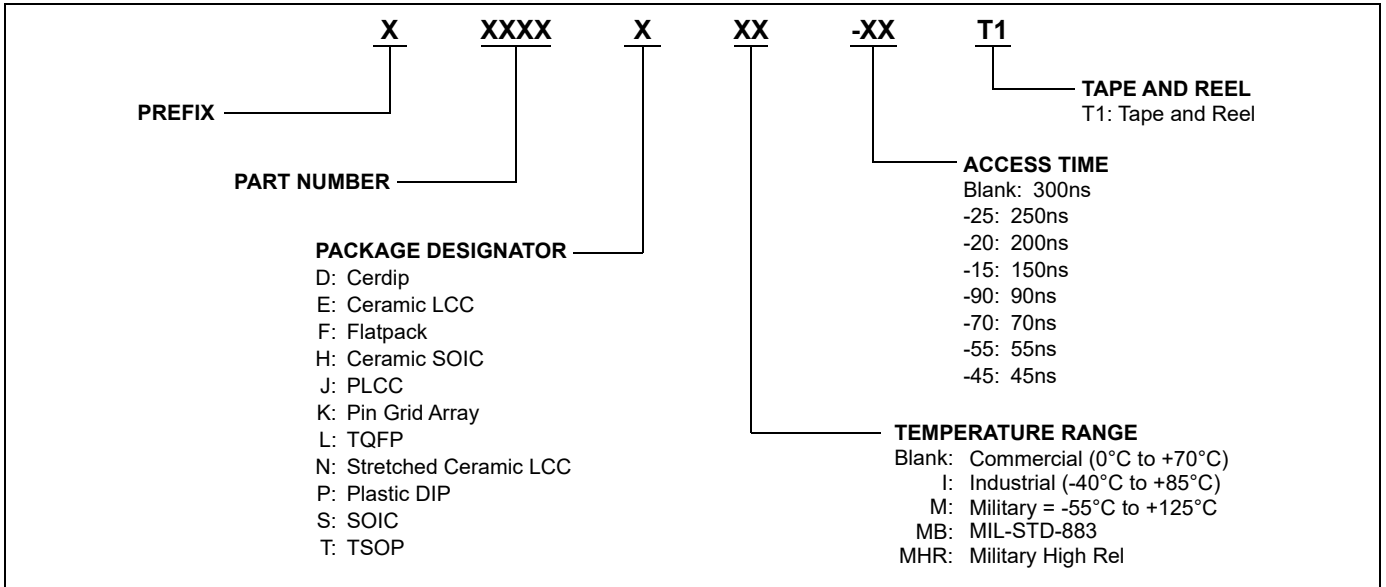
Bias and Control for Laser Diode



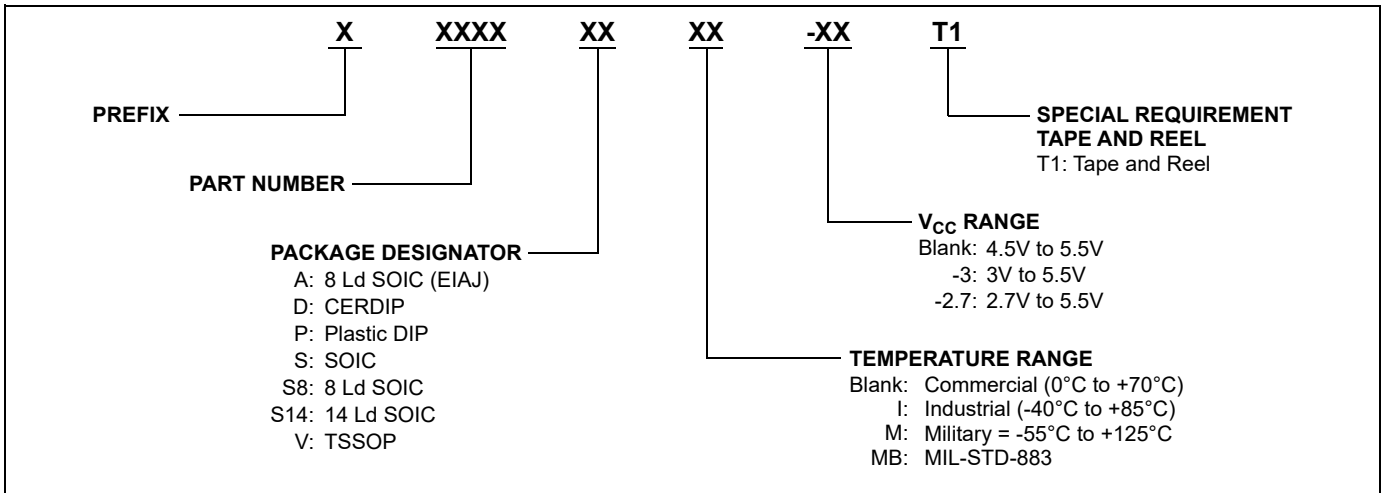
General Purpose Sensor Conditioners with Look-Up Table Memory



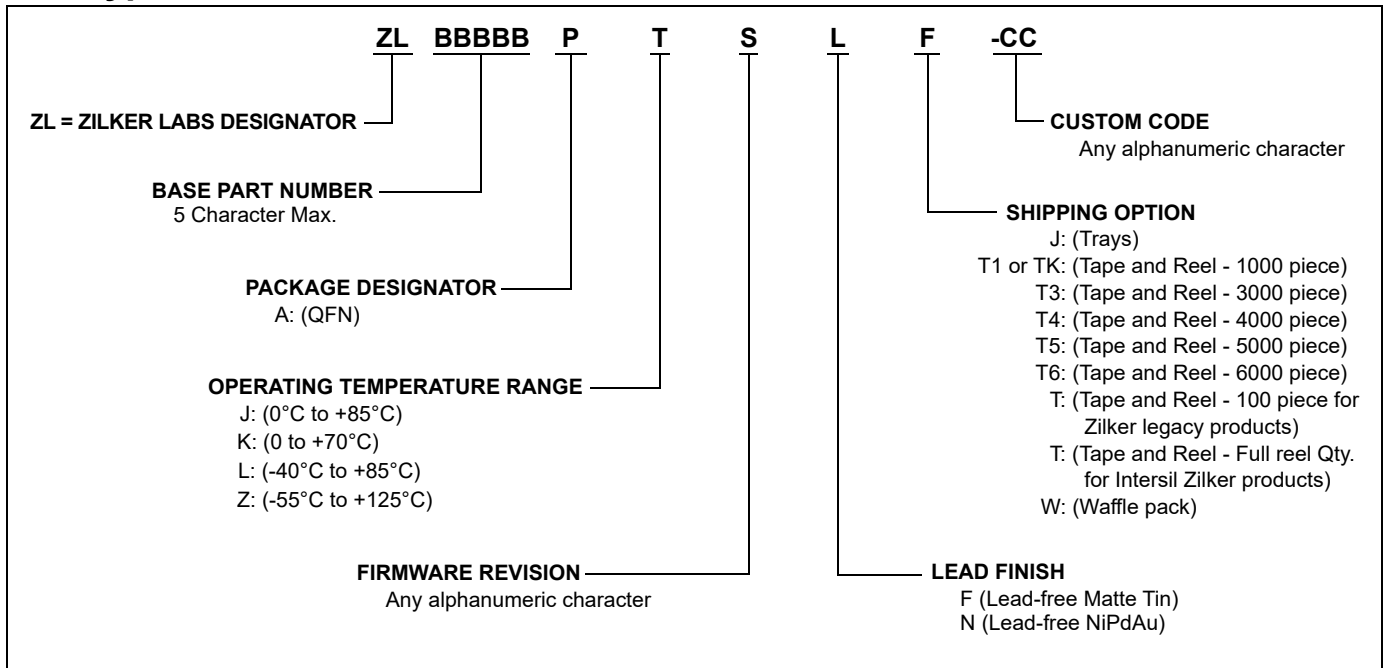
Parallel E²PROM



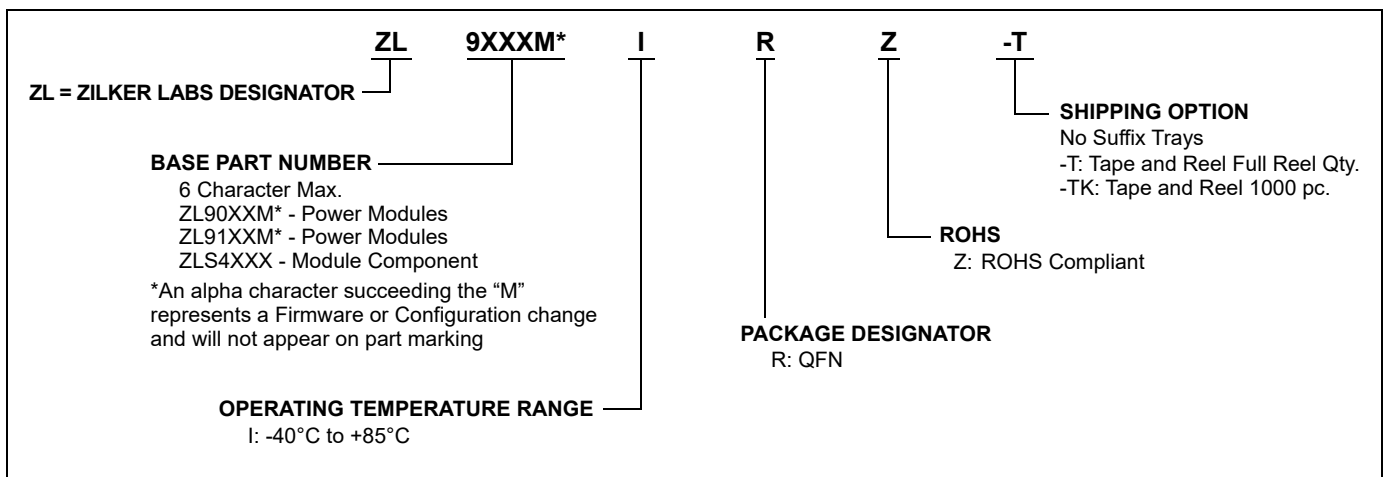
Serial E²PROM



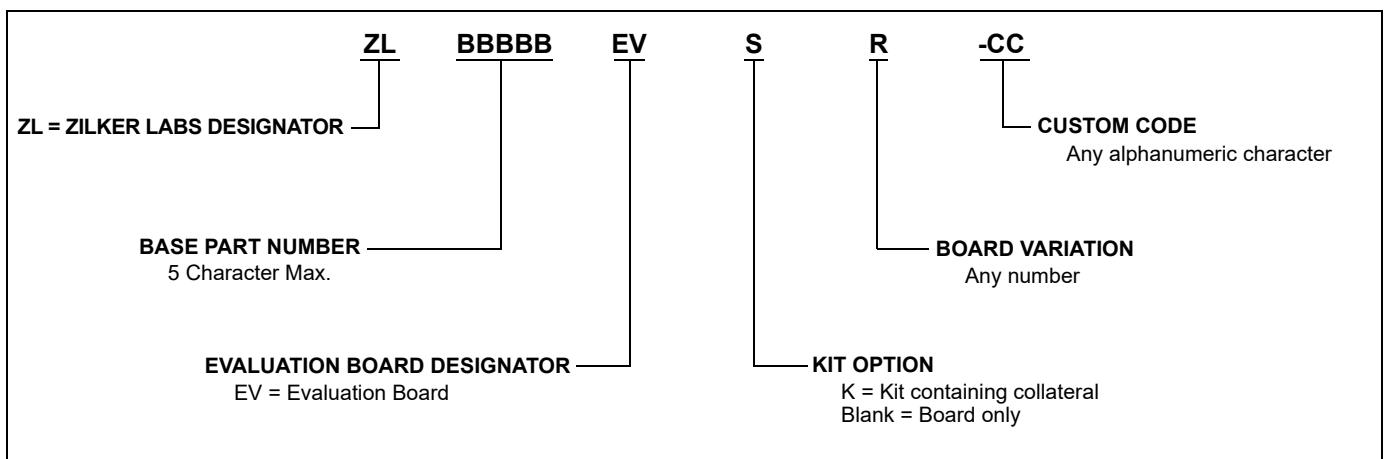
ZL Types



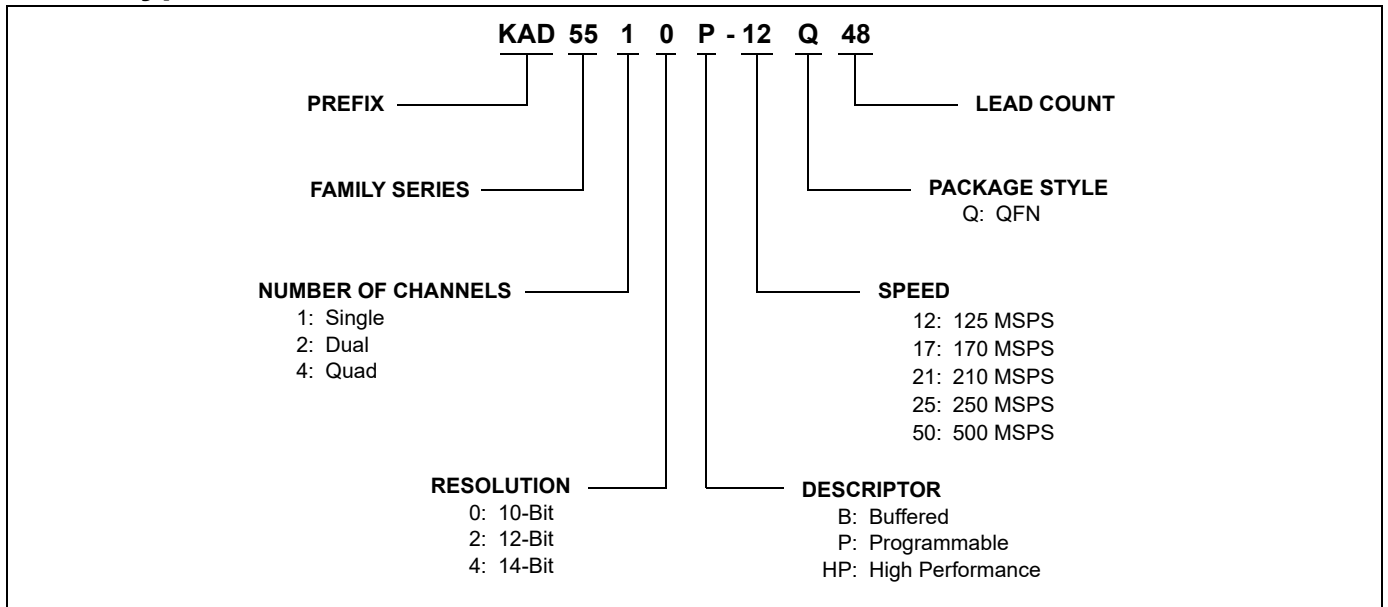
ZL Power Modules



ZL Evaluation Boards

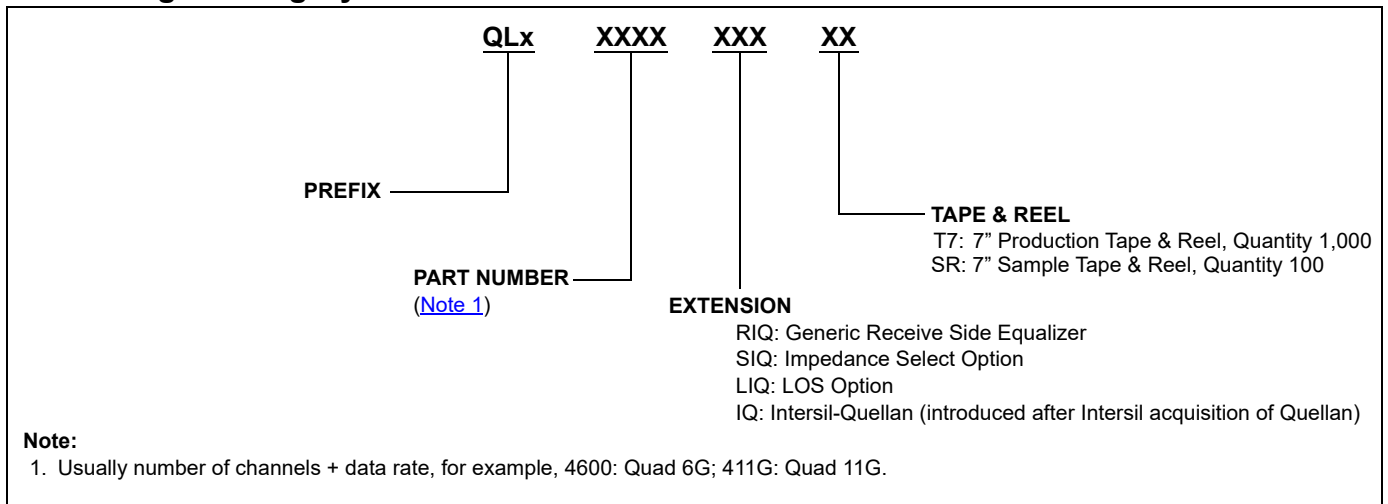


KAD Types

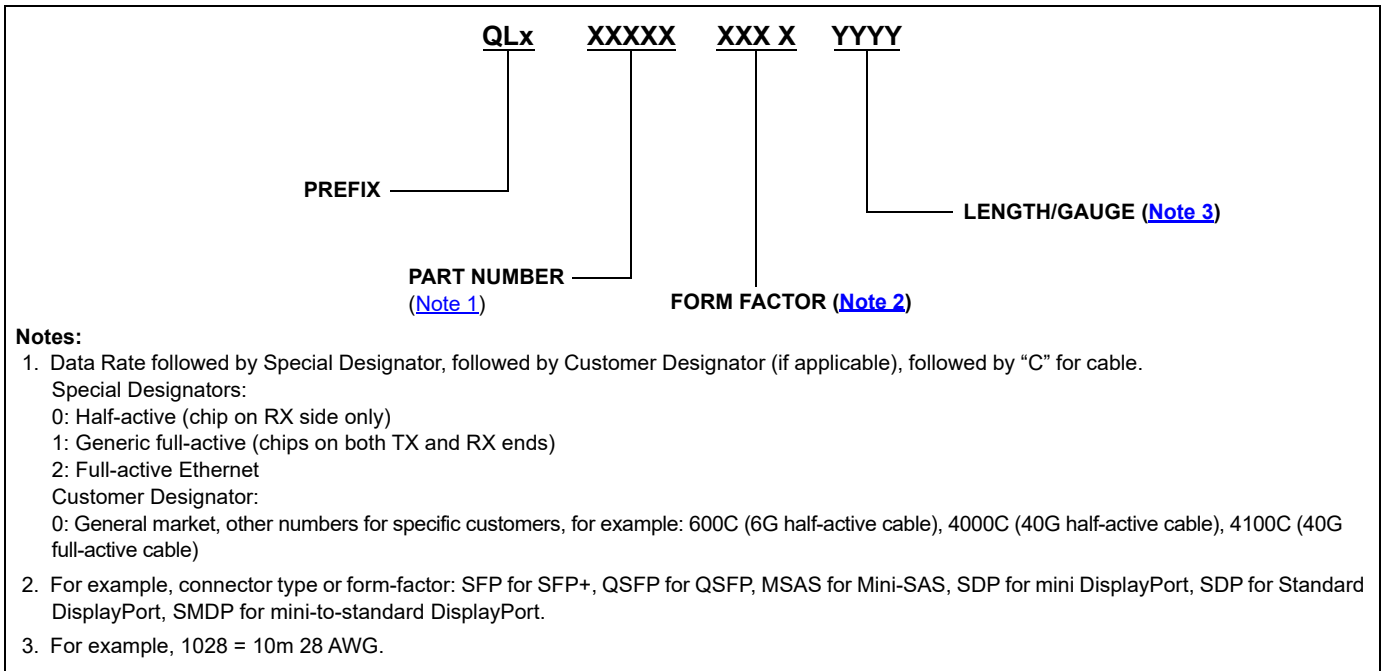


QLx Types

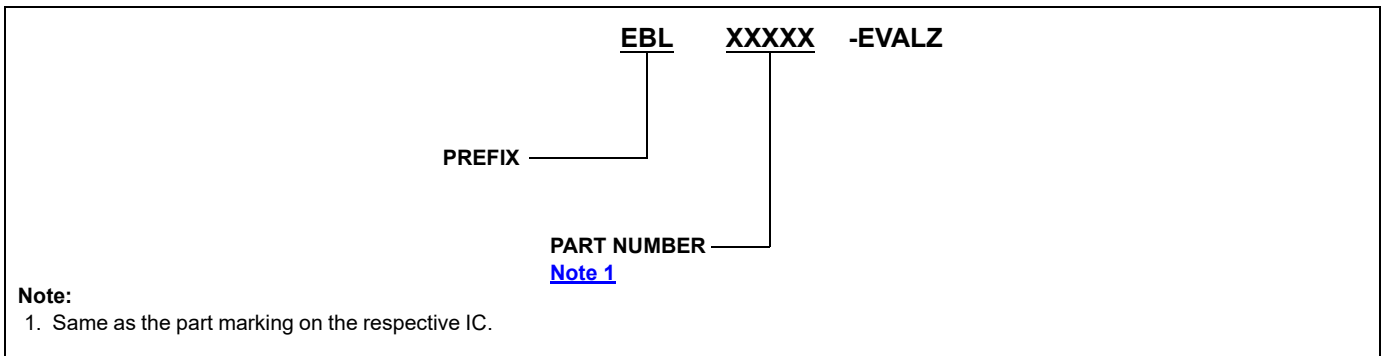
Wired Signal Integrity Parts



Active Cables

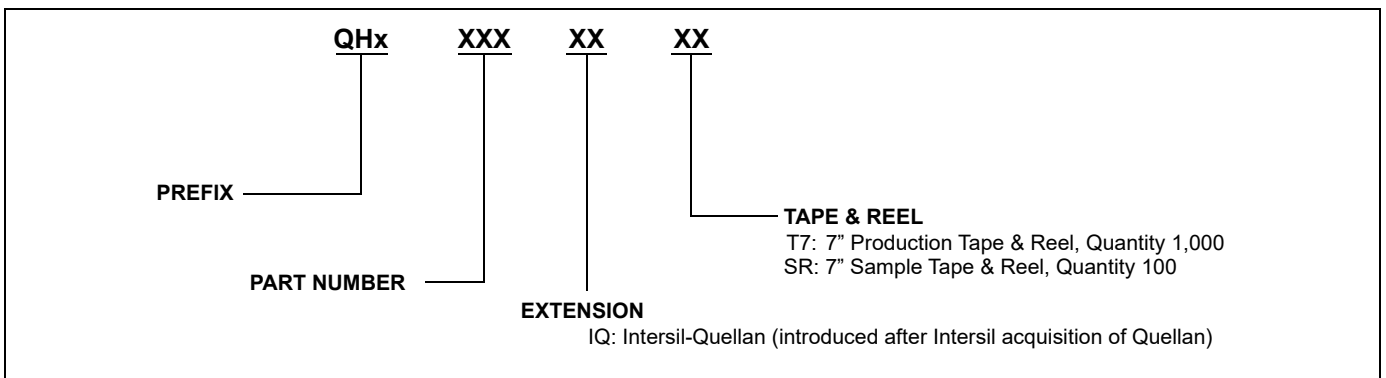


QL Evaluation Boards

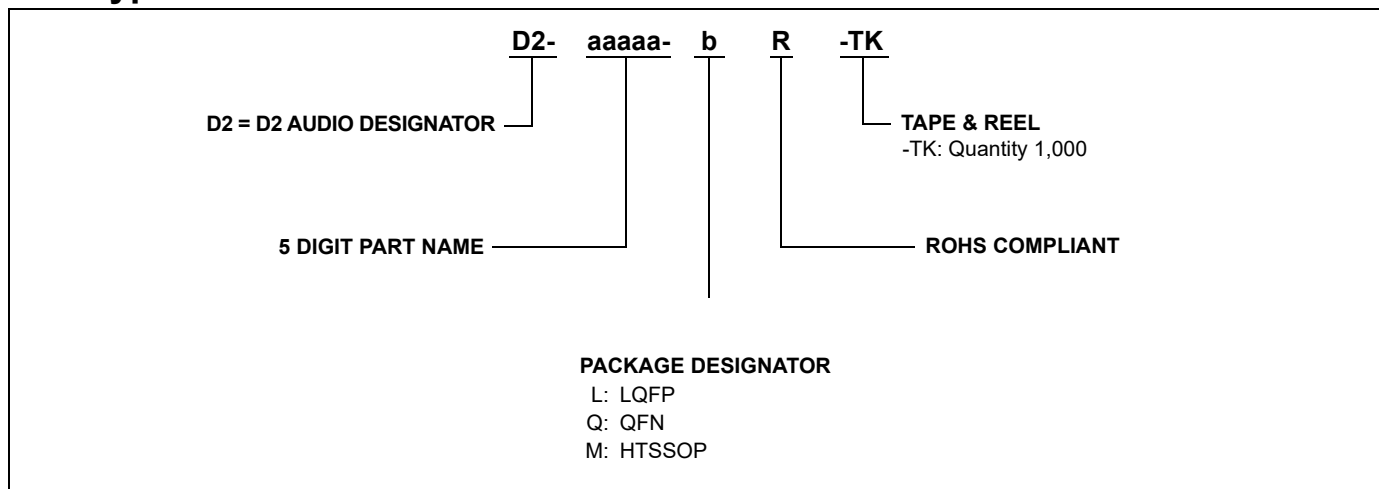


QHx Types

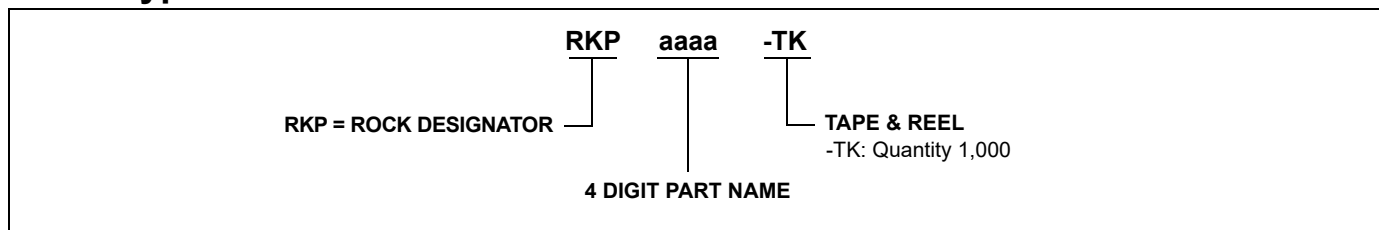
Wireless Noise Cancellation Parts



D2 Types



RKP Types



TW Types

TW **aaaa** **bb** - **c** **d** **e** **f** **g#** - **h** **j** **k** **l**

PREFIX ——— TW

DEVICE NUMBER ——— aaaa bb - c

AT: Auto Wafer
EP: Epi Wafer

c - PROCESS ——— c

This character is included in the marking of legacy products only.

PROCESS	CODE
TSMC, 0.35µm, Polycide, SPQM or SPTM Logic	A
TSMC, 0.25µm	B
X-FAB, 0.25µm	C
TSMC, 0.18µm	D
X-FAB, 0.18µm	E
TSMC, 0.18µm, EPI, Ar Anneal, Hi	G
Goyatek/Vanguard, 0.25µm	H
TSMC 0.25µm EPI, Ar Anneal, Hi	J
TSMC 0.18µm Automotive Process	K
TSMC 0.13µm	M
TSMC 90nm	N
Fujitsu 90nm	P
TSMC 0.13µm 12" Wafer	Q
TSMC 65nm	R
TSMC 45nm	S

d - ASSEMBLY VENDOR ——— d

This character is included in the marking of legacy products only.

ASSEMBLY VENDOR	CODE
ASEK	A
ASECL	B
GAPT	C
i2a/IPAC, Quick Pak	D
SPIL	E
ChipMOS	G
UTAC	J
Fujitsu	K
Amkor Korea	M

e - ——— e

Q: 12" Wafer

f - PACKAGE TYPE A ——— f

PACKAGE TYPE	CODE
BGA package	B
LQFP package	L
PQFP package	P
TQFP package	T
QFN package	N
PQFP package with Exposed Heat Spreader	E

g# - DIE REVISION ——— g#

It starts from A1. If full layers are changed, the die revision changes like A1→B1→C1, etc.
If some layers are changed, the die revision changes like A1→A2→A3, etc.

h - PACKAGE TYPE B ——— h

PACKAGE TYPE	CODE
Green (Halogen Free) and Lead Free package	G (Note)
Normal package	N
Green (Halogen Free) and Lead Free package with Cu Bond Wires	C
Flip Chip	F

Note: The following FG's also use Cu wire:
TW6815-LA1-GR
TW6816-LA1-GR
TW6817-LA1-GR
TW6818-LA1-GR
TW6932-LA1-GR

j - PACKAGE TYPE C ——— j

PACKAGE TYPE	CODE
Drop-in heat spreader	D
Exposed heat spreader	E
Regular package without heat spreader	R

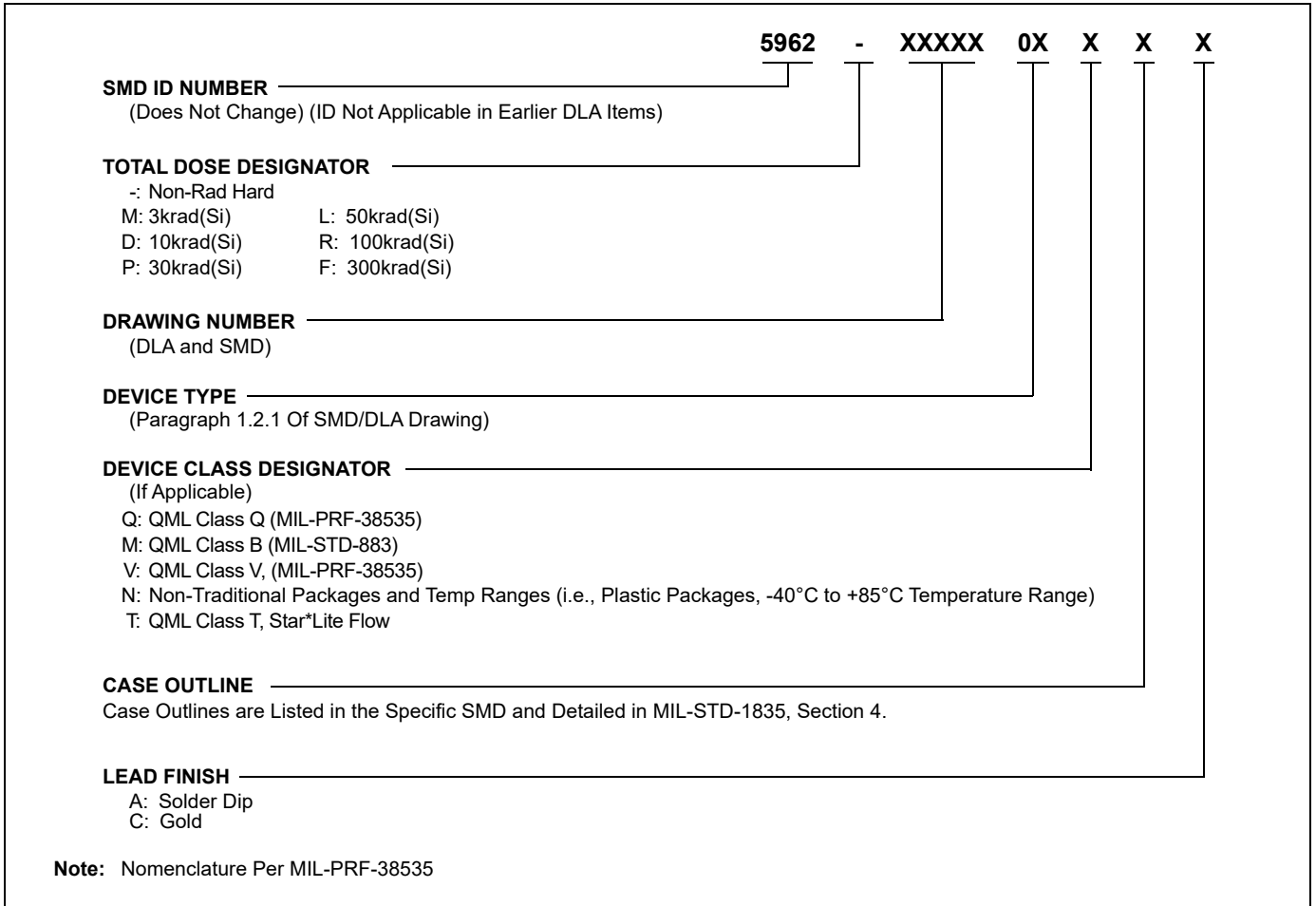
k - PACKAGE VARIANT ——— k

PACKAGE VARIANT	CODE
This is only used when one product type is offered in 2 different sizes or lead counts of the same package style. The last FG# created will include the lead count.	128 (lead count)

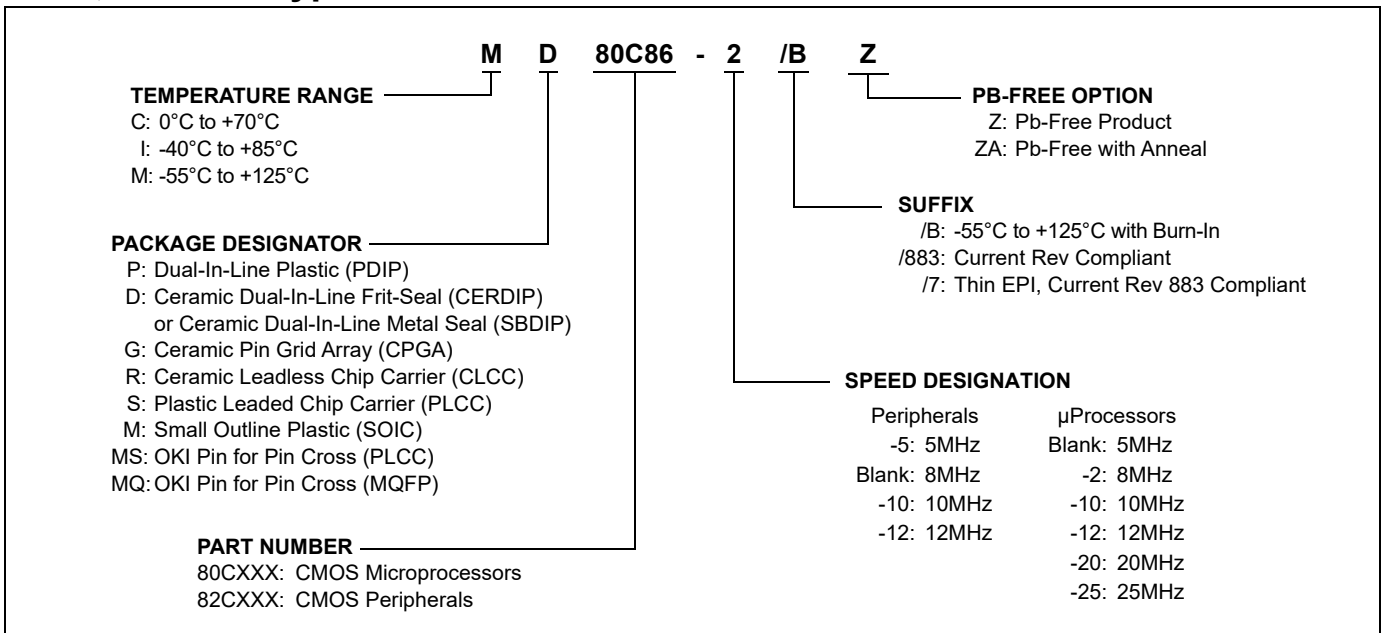
l - OPTIONS ——— l

S = SLT
B = Burn-in
H = High Temp. Testing
I = Industrial
V = High Volt Testing
T = Tape & Reel Packing

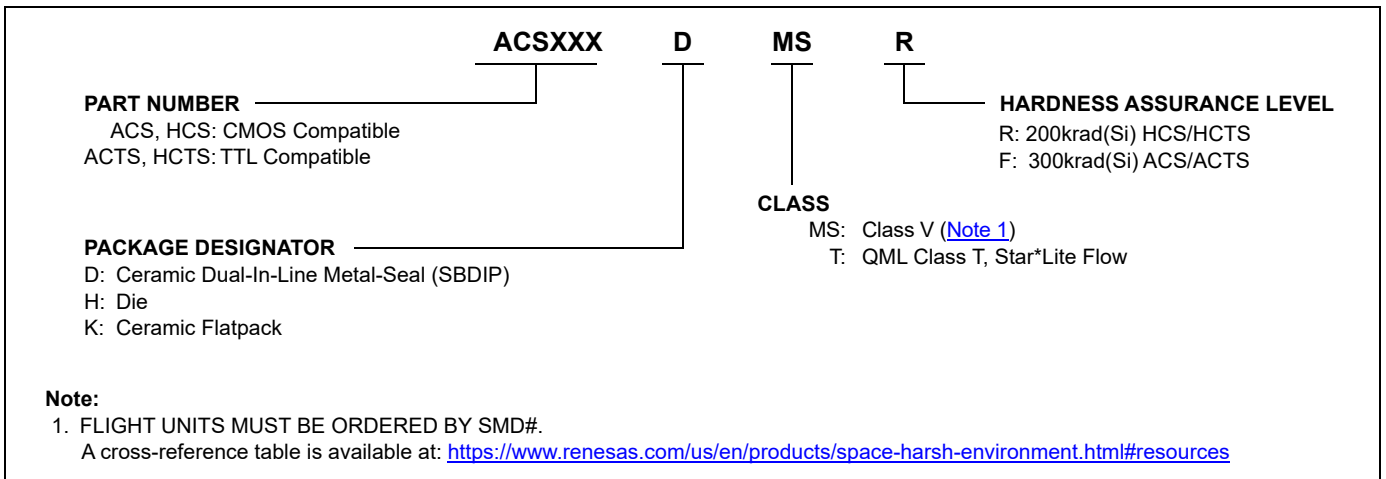
5962 SMD/DLA - QML Types



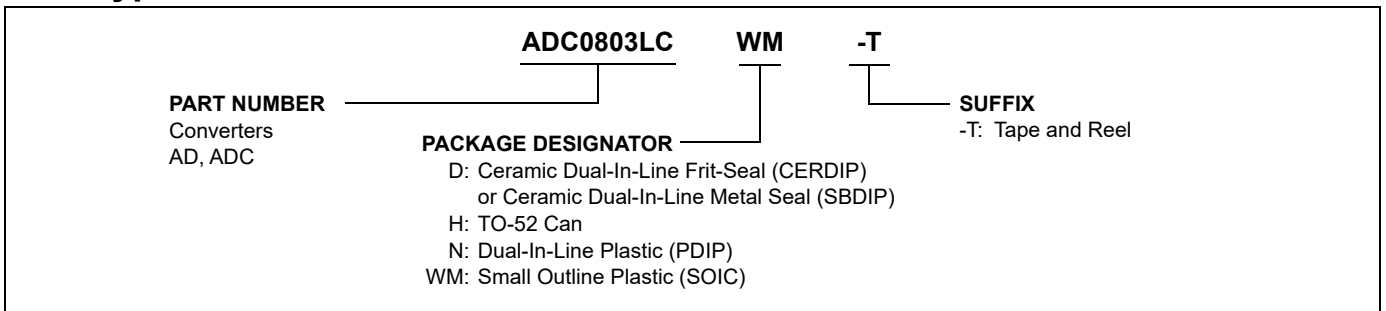
80C, 82CXXX Types



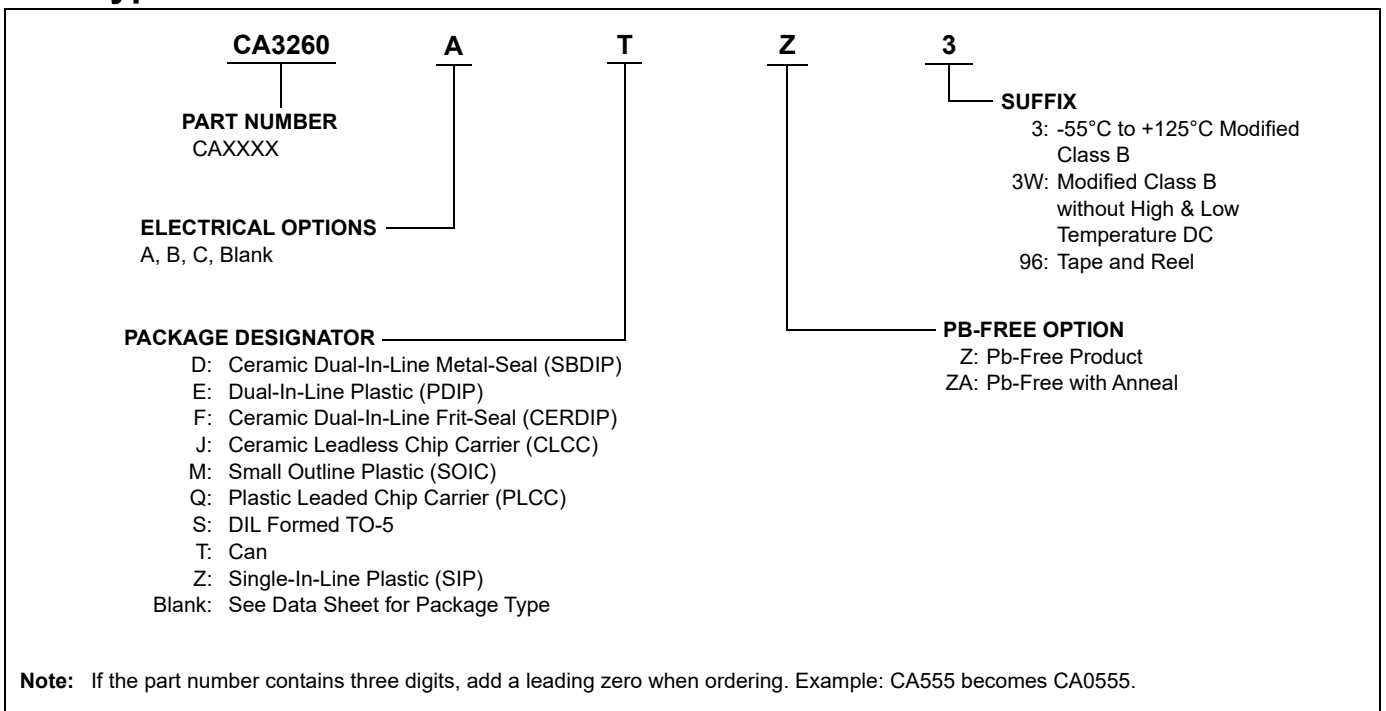
ACS, ACTS, HCS, HCTS Radiation Hardened Types



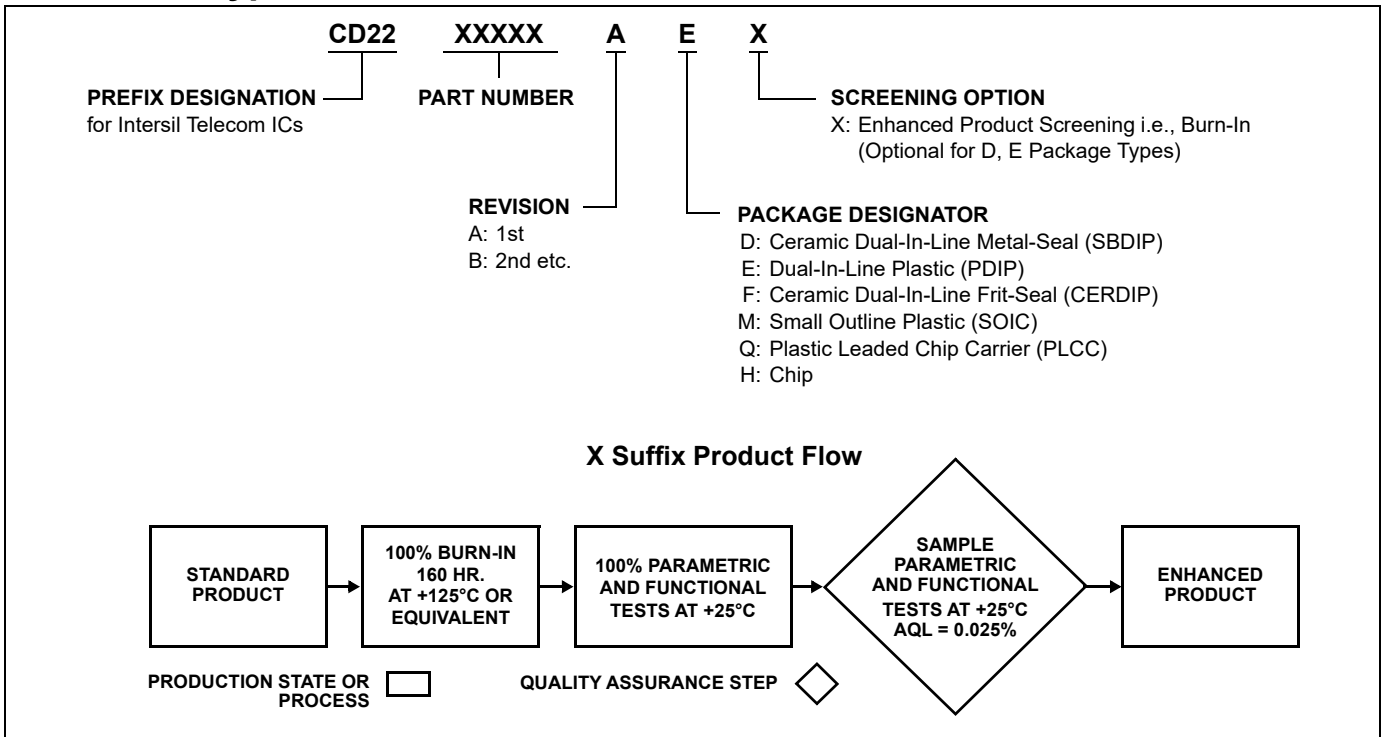
AD Types



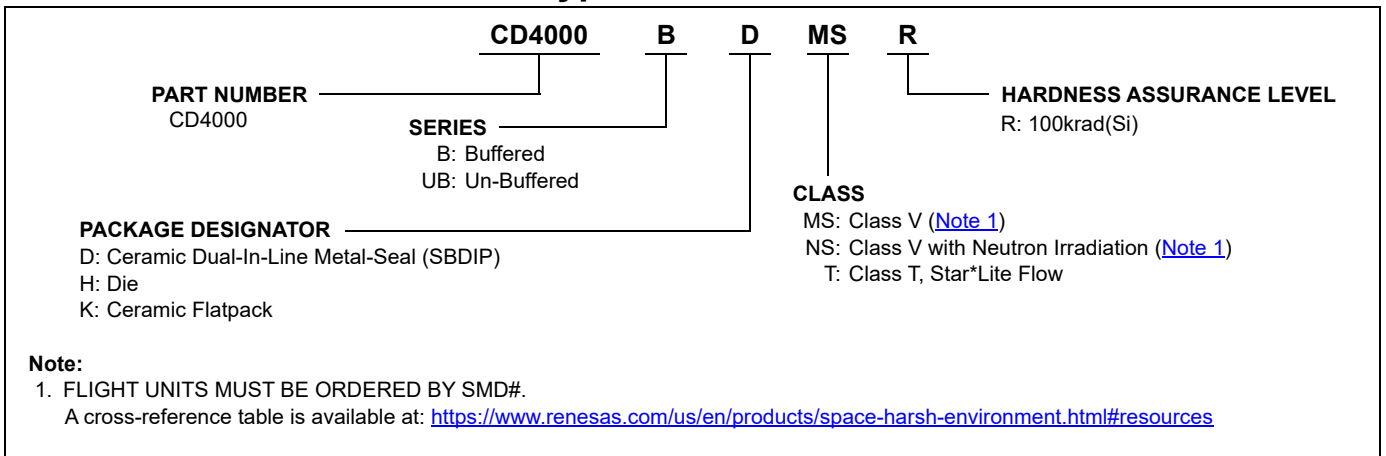
CA Types



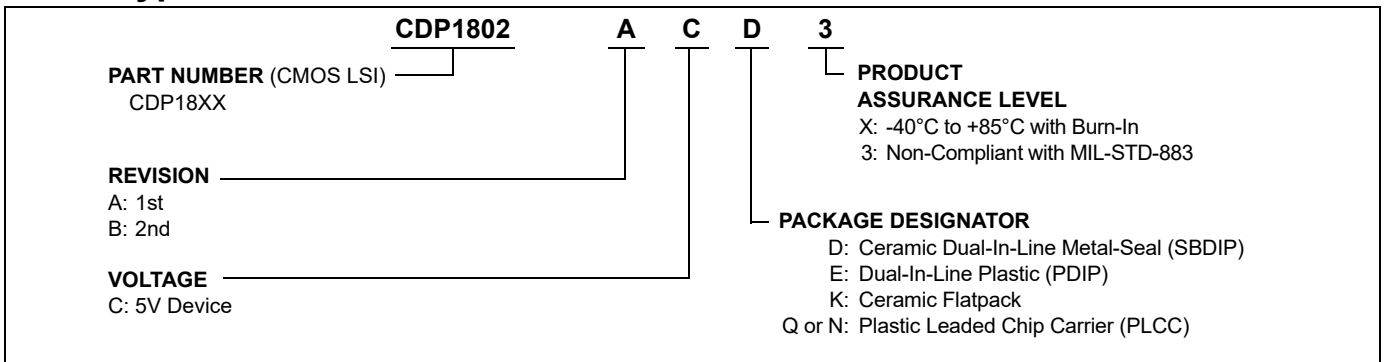
CD22XXX Types



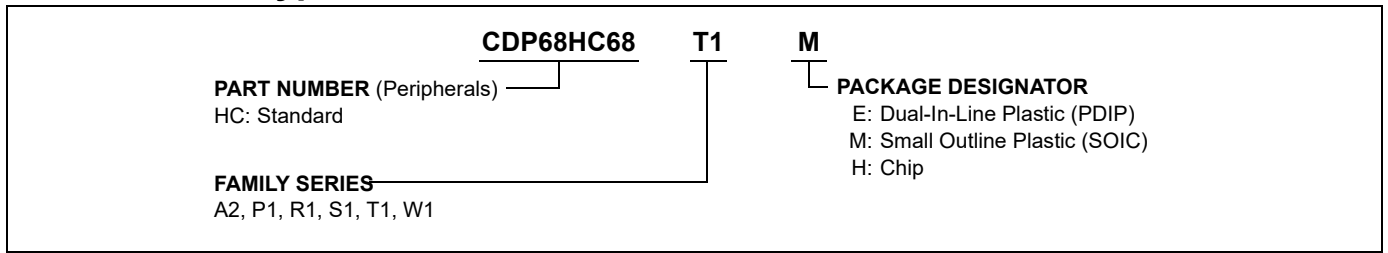
CD4000 Radiation Hardened Types



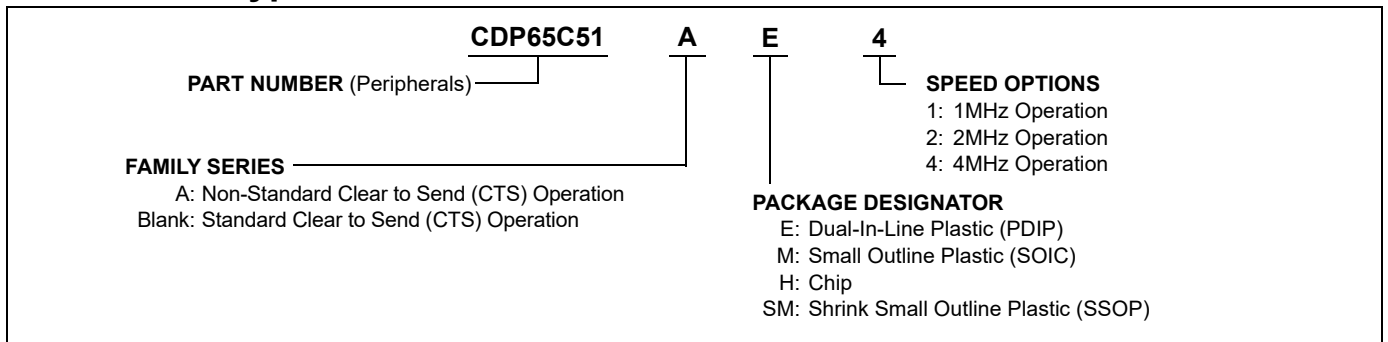
CDP Types



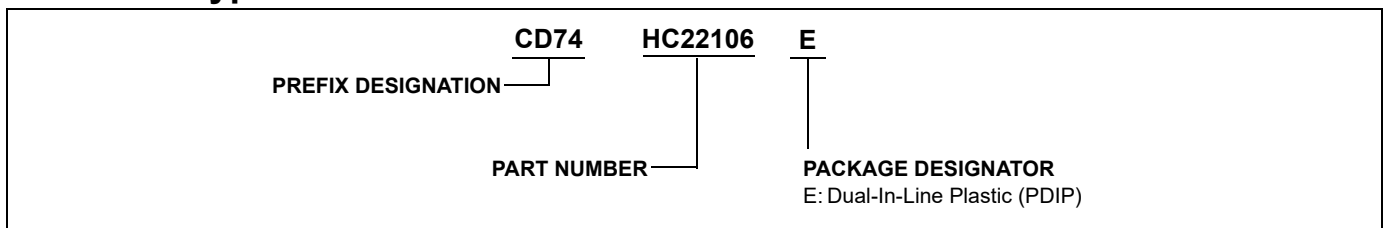
CDP68HC68 Types



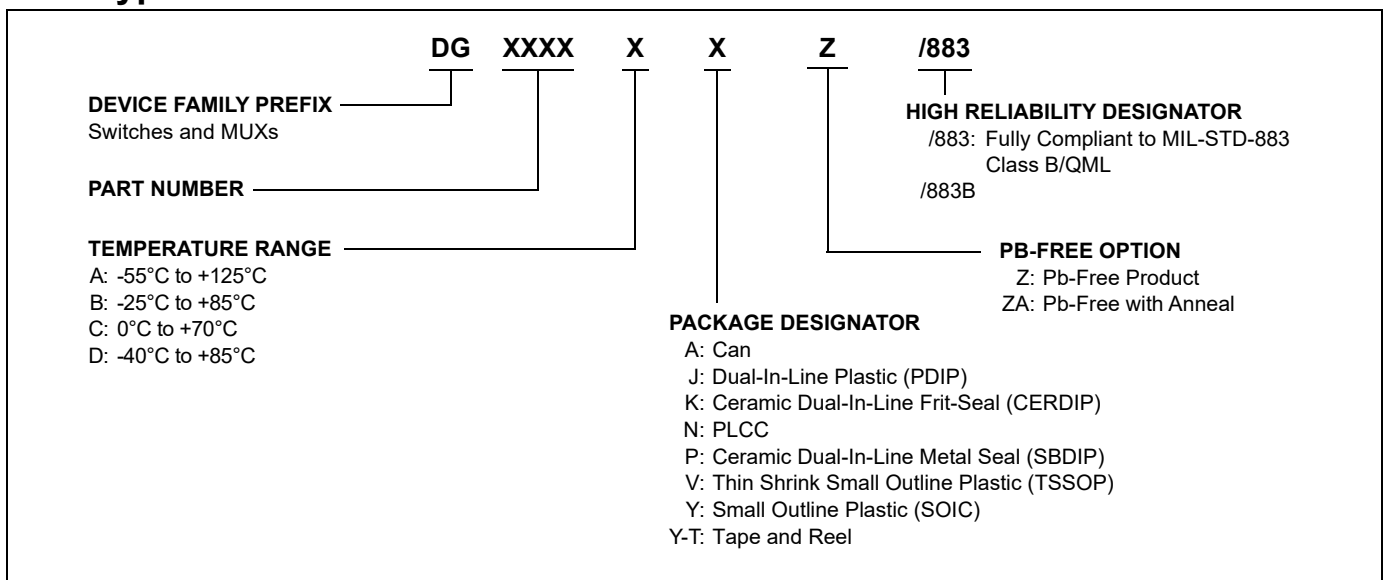
CDP65C51 Types



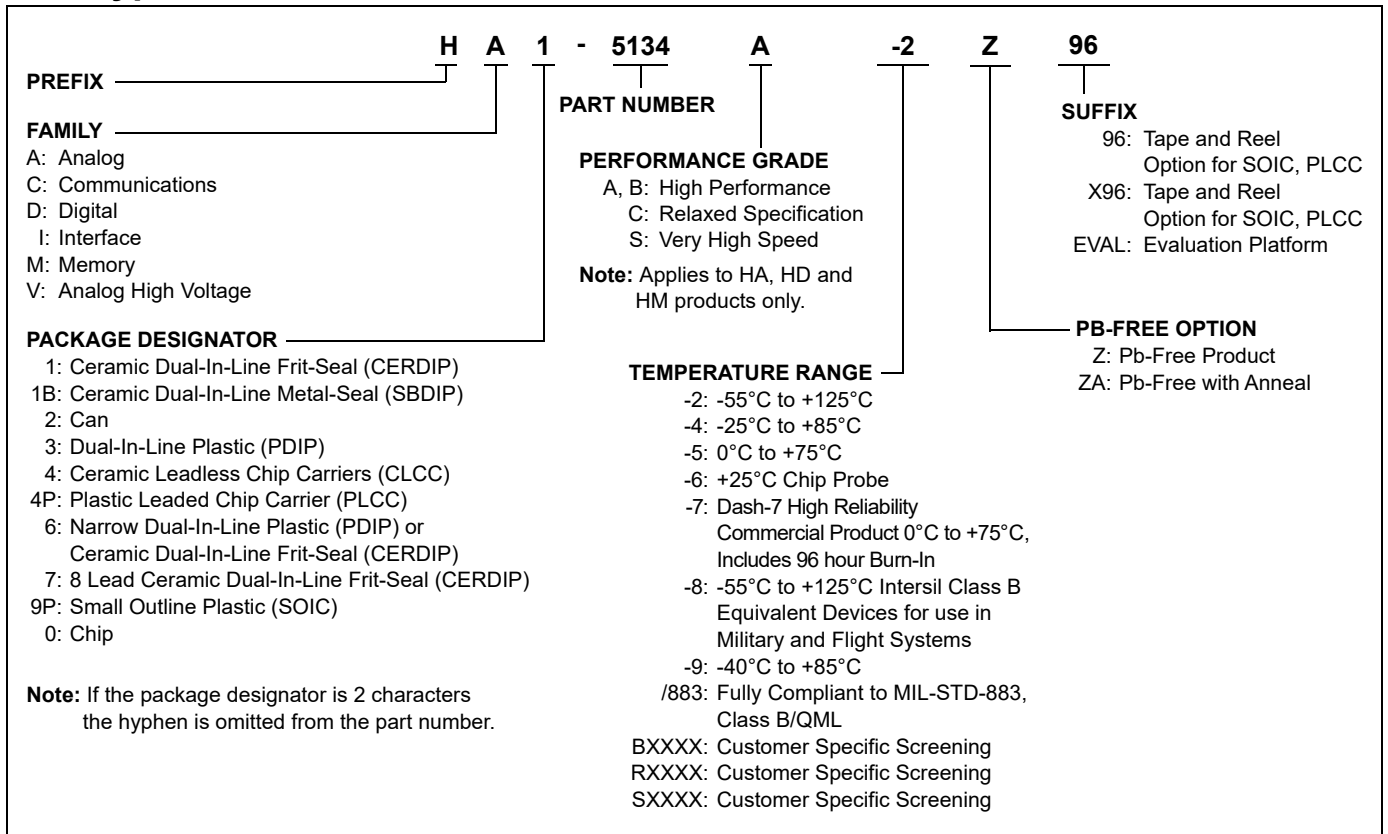
CD74HC Types



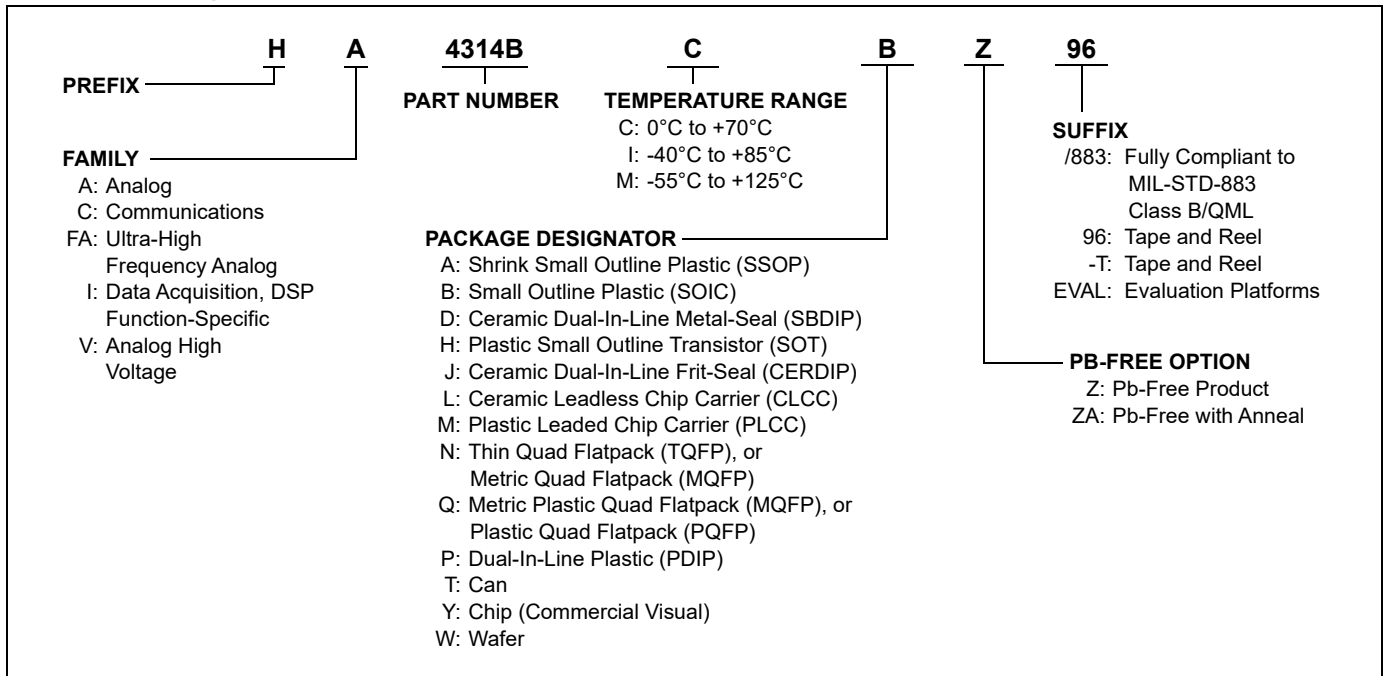
DG Types



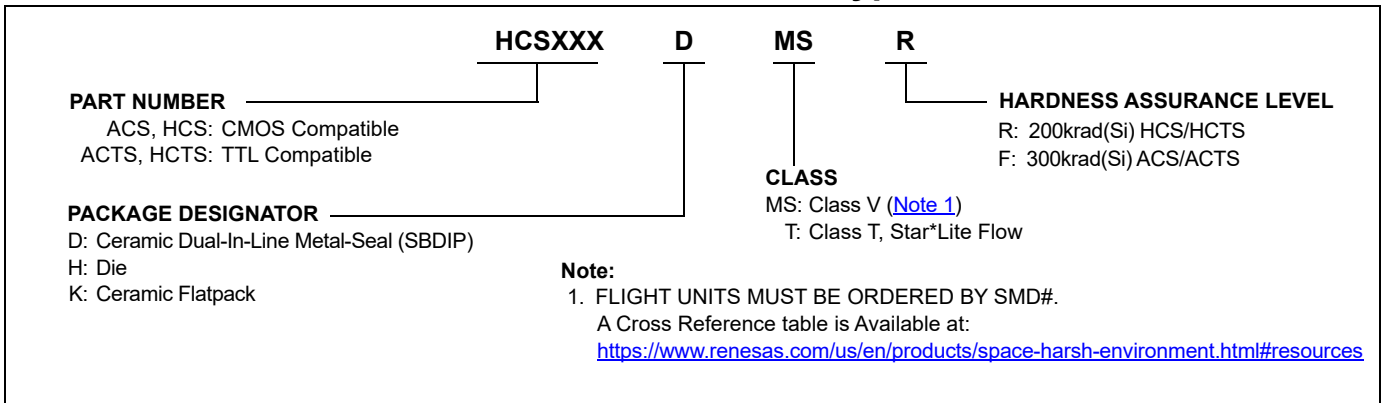
HX Types



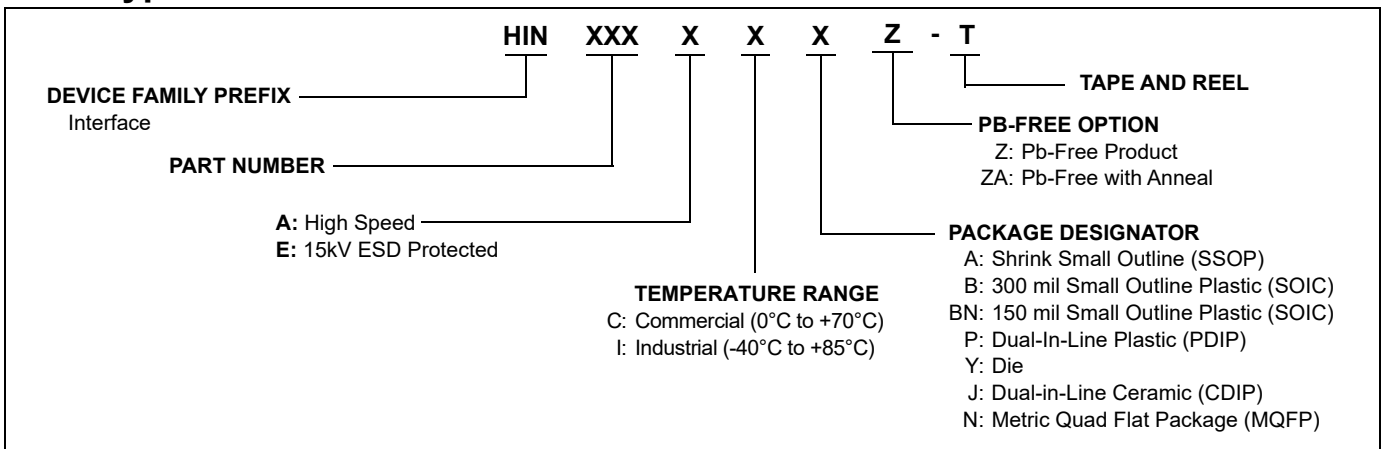
HX, HXX Types



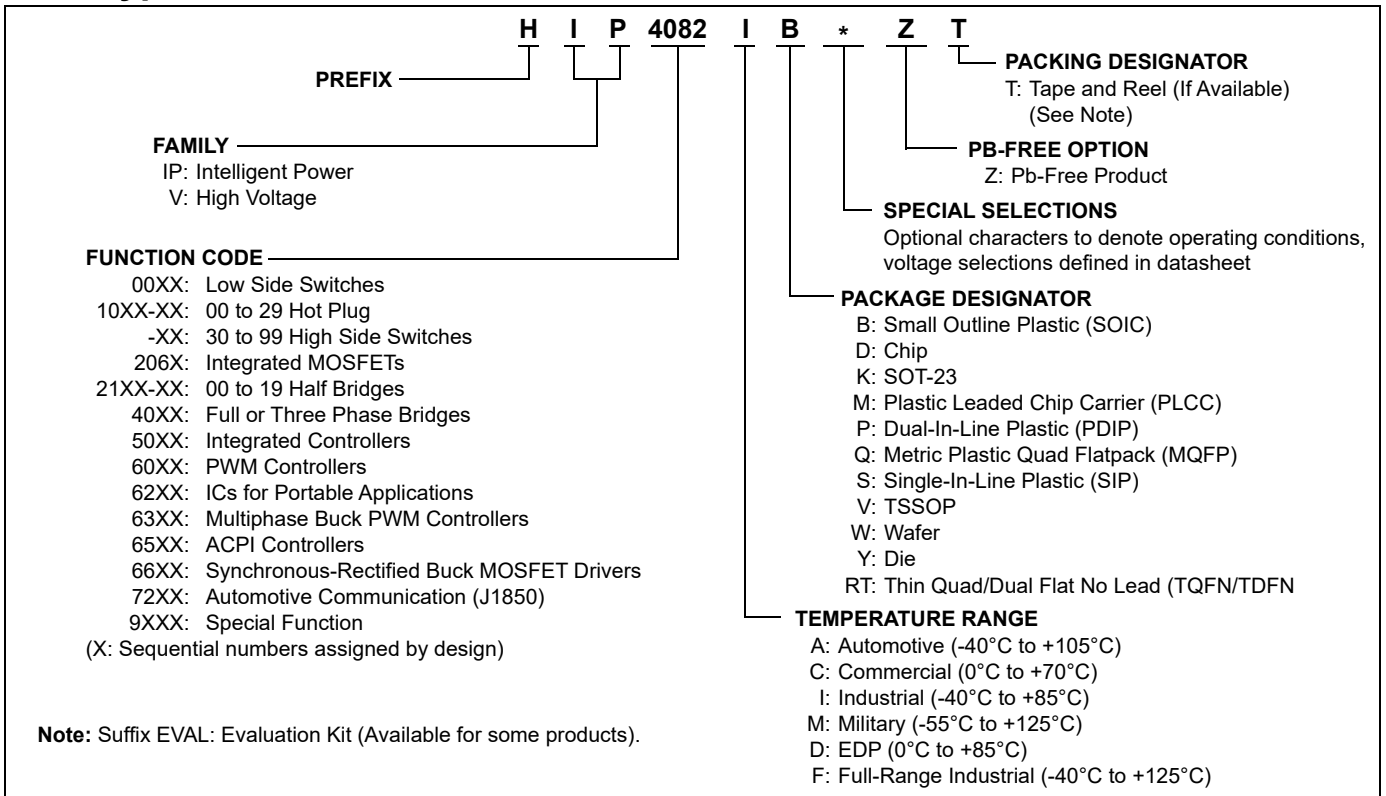
HCS, HCTS, ACS, ACTS, Radiation Hardened Types



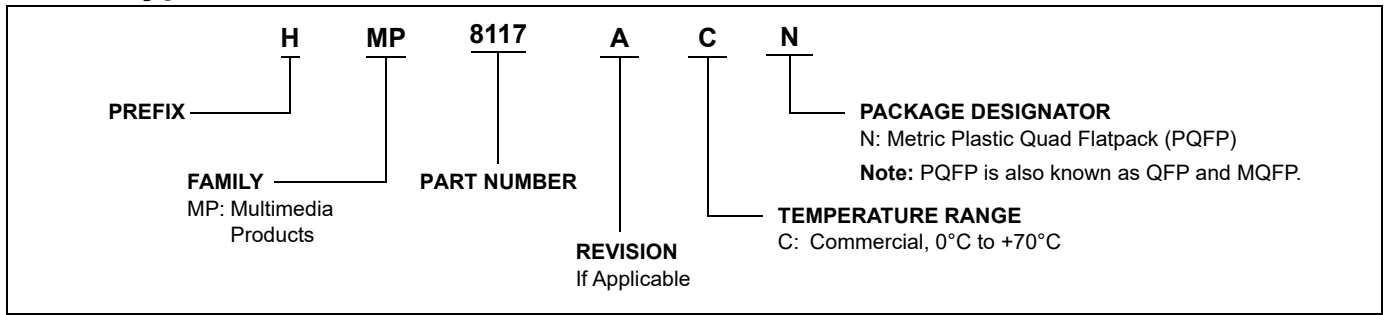
HIN Types



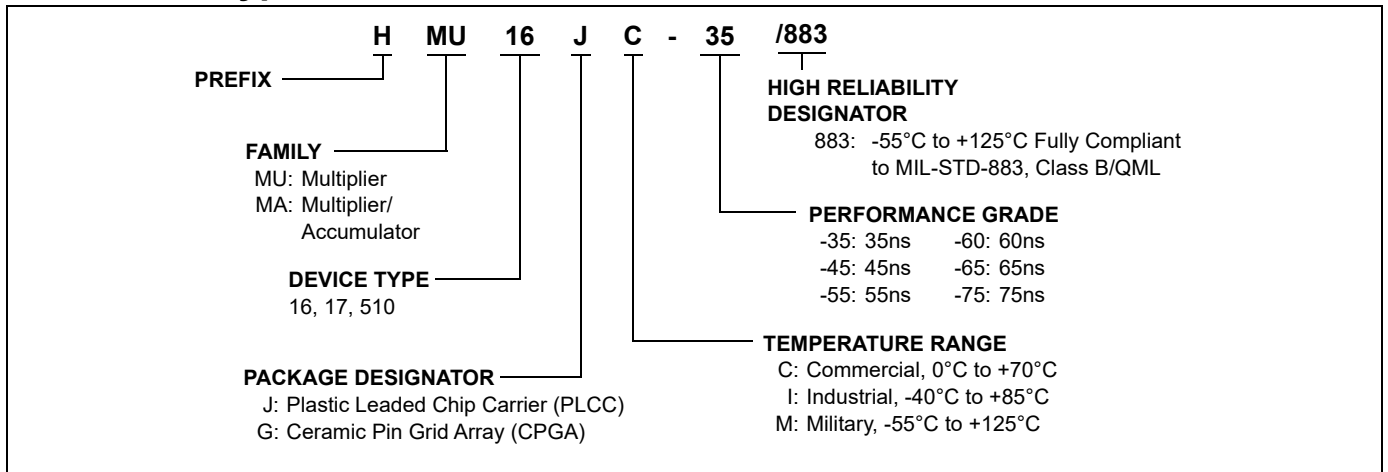
HIP Types



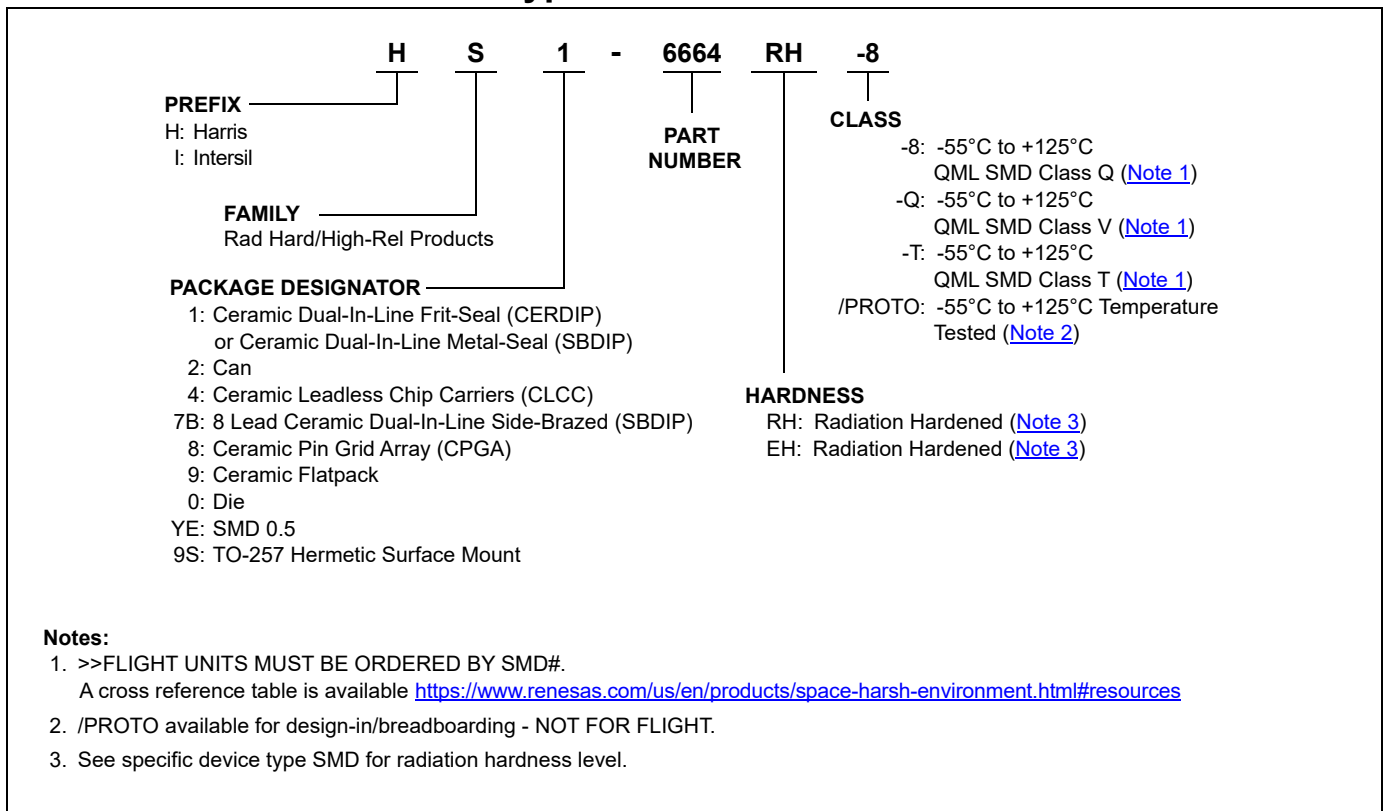
HMP Types



HMU/HMA Types



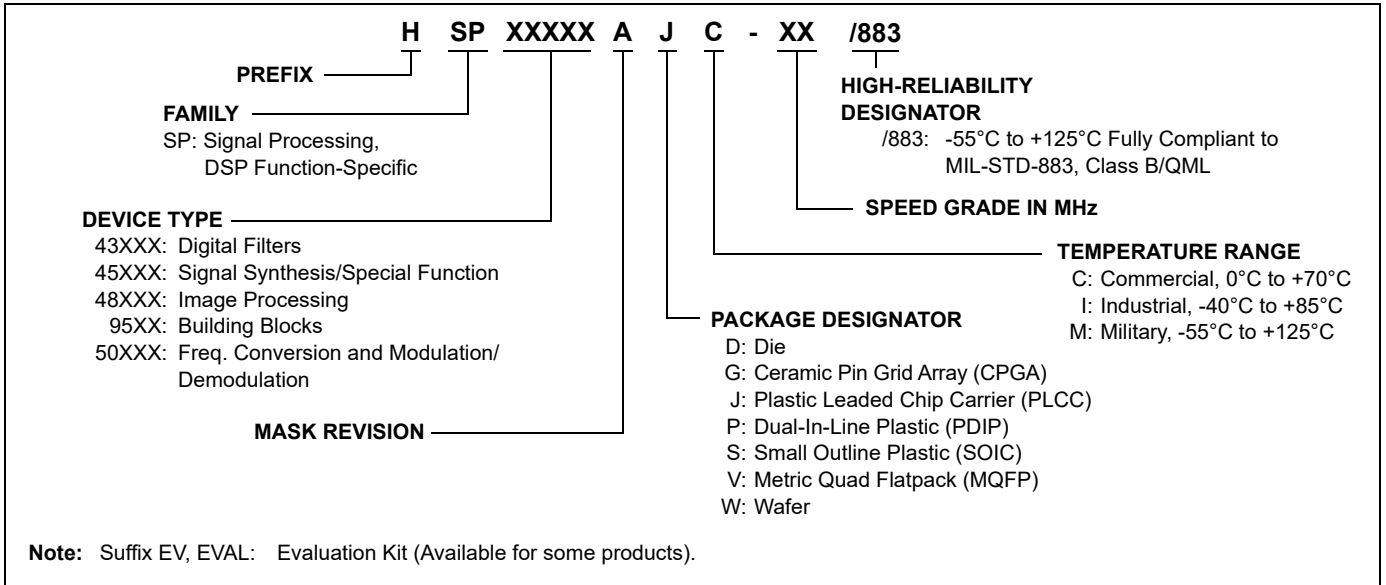
HS/IS Radiation Hardened Types



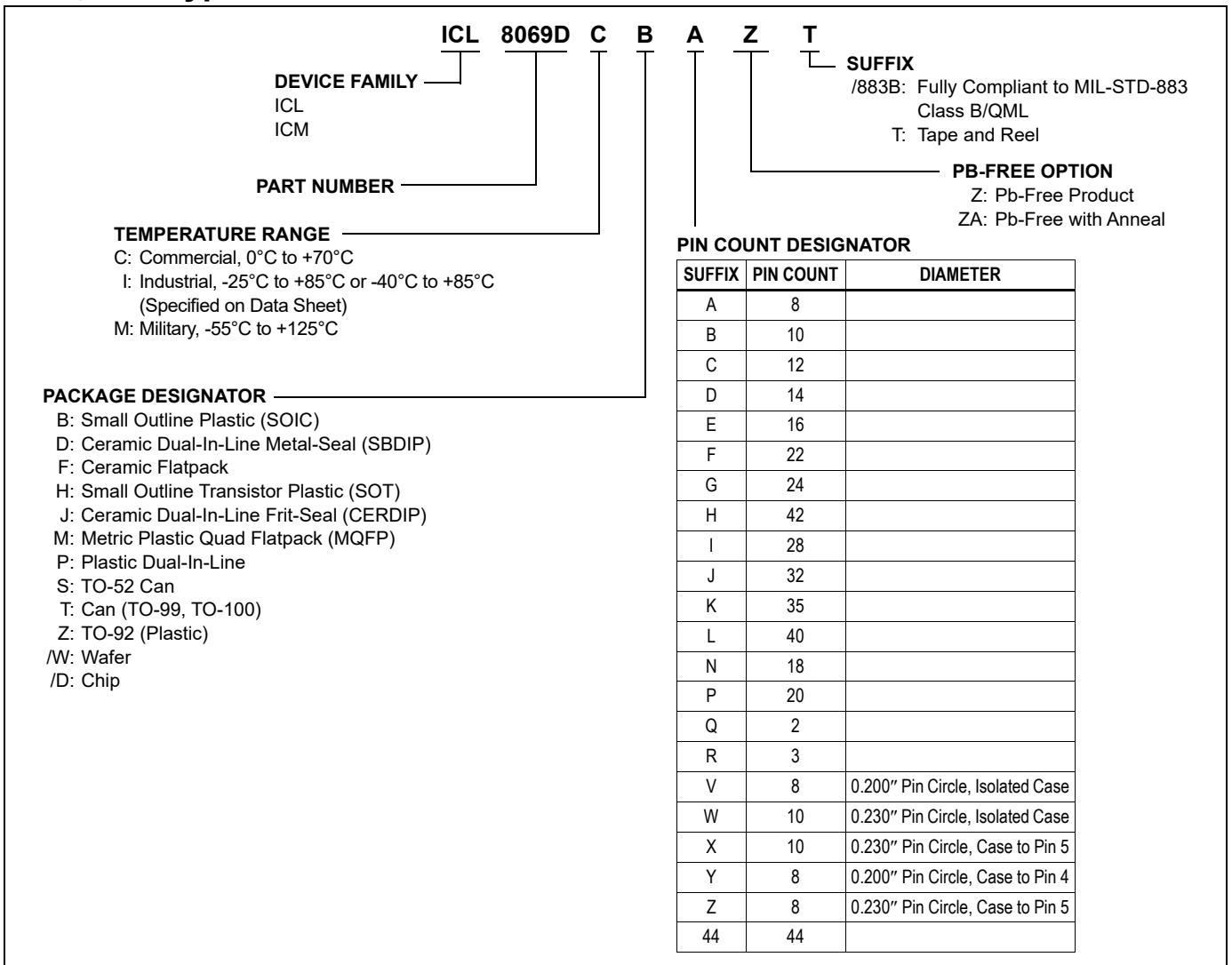
Notes:

- >>FLIGHT UNITS MUST BE ORDERED BY SMD#. A cross reference table is available <https://www.renesas.com/us/en/products/space-harsh-environment.html#resources>
- /PROTO available for design-in/breadboarding - NOT FOR FLIGHT.
- See specific device type SMD for radiation hardness level.

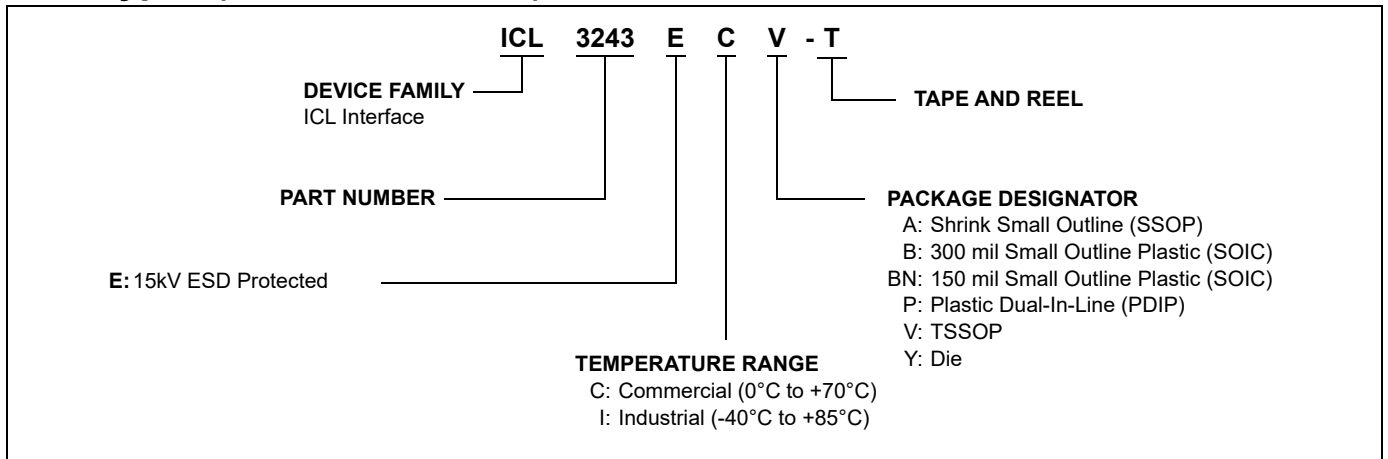
HSP Types



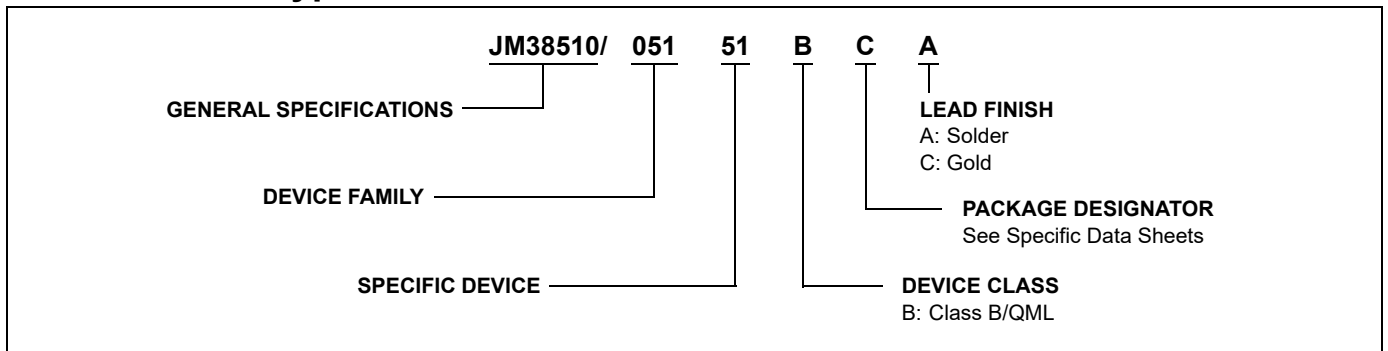
ICL, ICM Types



ICL Types (Interface Circuits)



JM JAN-QML Types



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(Rev.1.0 Mar 2020)

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