

APM7318

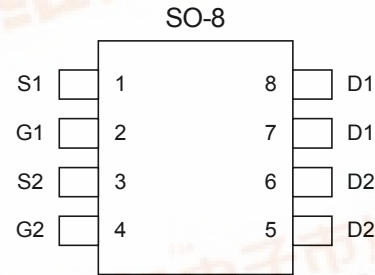


Dual N-Channel Enhancement Mode MOSFET

Features

- 20V/8A , $R_{DS(ON)} = 15m\Omega (typ.) @ V_{GS} = 4.5V$
 $R_{DS(ON)} = 30m\Omega (typ.) @ V_{GS} = 2.5V$
- Super High Dense Cell Design for Extremely Low $R_{DS(ON)}$
- Reliable and Rugged
- SO-8 Package

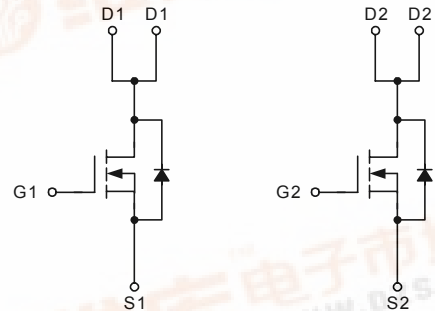
Pin Description



Top View

Applications

- Power Management in Notebook Computer , Portable Equipment and Battery Powered Systems.



N-Channel MOSFET N-Channel MOSFET

Ordering and Marking Information

APM7318 □□-□□ Handling Code Temp. Range Package Code	Package Code K : SO-8 Operation Junction Temp. Range C : -55 to 150°C Handling Code TR : Tape & Reel
APM7318 K : APM7318 XXXXX	XXXXX - Date Code

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Rating	Unit
V_{DSS}	Drain-Source Voltage	20	V
V_{GSS}	Gate-Source Voltage	± 16	
I_D^*	Maximum Drain Current – Continuous	8	A
I_{DM}	Maximum Drain Current – Pulsed	24	
P_D	Maximum Power Dissipation	$T_A = 25^\circ\text{C}$	W
		$T_A = 100^\circ\text{C}$	W
T_J	Maximum Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance – Junction to Ambient	50	$^\circ\text{C/W}$

* Surface Mounted on FR4 Board, $t \leq 10$ sec.

Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Condition	APM7318			Unit
			Min.	Typ.	Max.	
Static						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _{DS} =250μA	20			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =18V , V _{GS} =0V			1	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	0.7	0.9	1.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±16V , V _{DS} =0V			±100	nA
R _{DS(ON)} ^a	Drain-Source On-state Resistance	V _{GS} =4.5V , I _{DS} =8A		15	20	mΩ
		V _{GS} =2.5V , I _{DS} =2A		30	40	
V _{SD} ^a	Diode Forward Voltage	I _{SD} =4A , V _{GS} =0V		0.7	1.3	V
Dynamic ^b						
Q _g	Total Gate Charge	V _{DS} =10V , I _{DS} = 6A V _{GS} =4.5V		14	17	nC
Q _{gs}	Gate-Source Charge			5		
Q _{gd}	Gate-Drain Charge			2.8		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =10V , I _{DS} =2A , V _{GEN} =4.5V , R _G =0.2Ω		9	15	ns
T _r	Turn-on Rise Time			14	20	
t _{d(OFF)}	Turn-off Delay Time			30	43	
T _f	Turn-off Fall Time			16	24	
C _{iss}	Input Capacitance	V _{GS} =0V		1220		pF
C _{oss}	Output Capacitance	V _{DS} =15V		335		
C _{rss}	Reverse Transfer Capacitance	Frequency=1.0MHz		215		

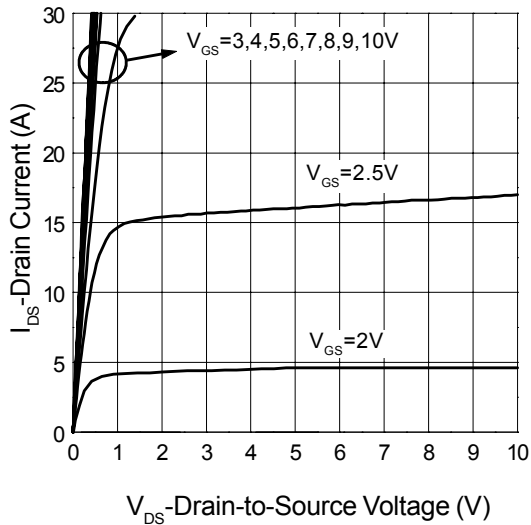
Notes

^a : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$

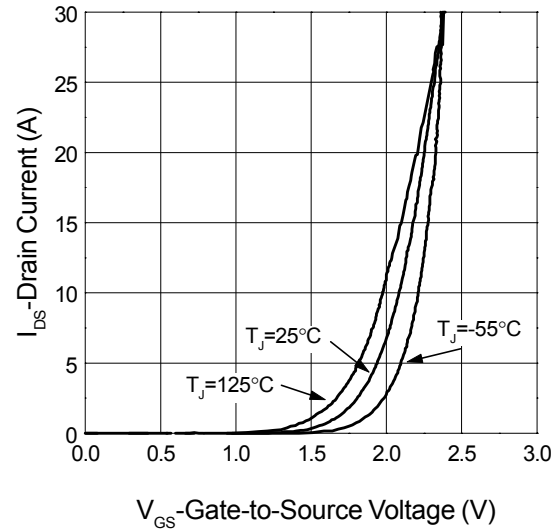
^b : Guaranteed by design, not subject to production testing

Typical Characteristics

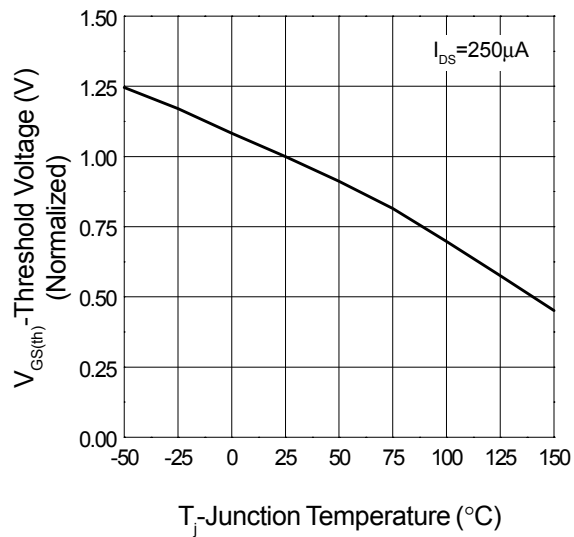
Output Characteristics



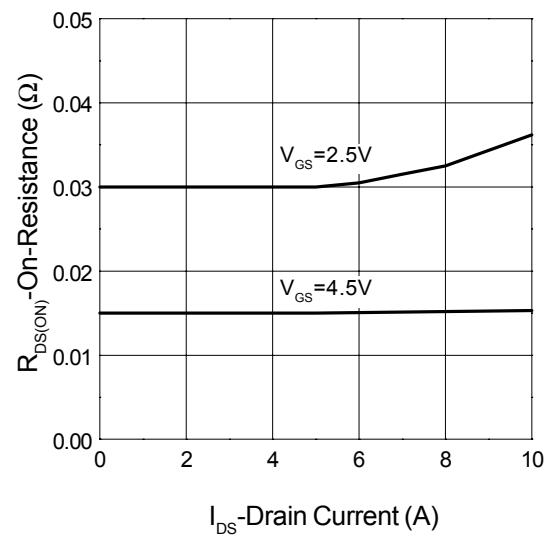
Transfer Characteristics



Threshold Voltage vs. Junction Temperature

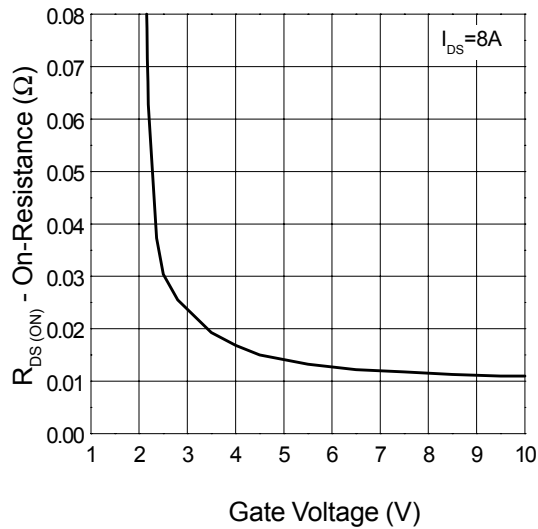


On-Resistance vs. Drain Current

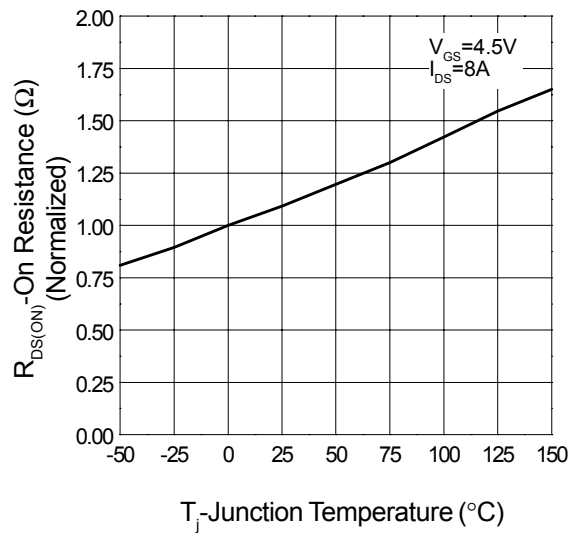


Typical Characteristics (Cont.)

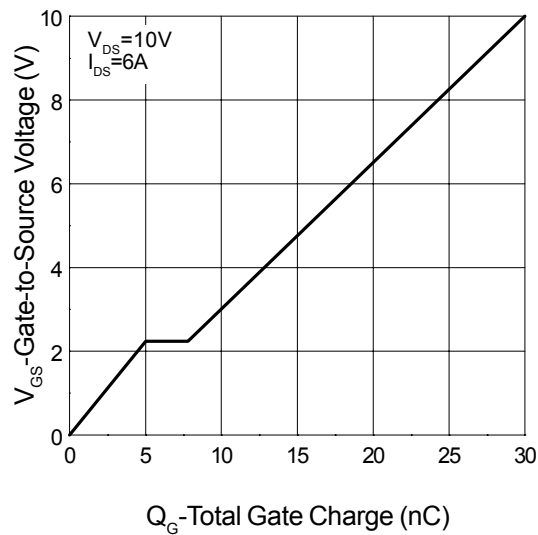
On-Resistance vs. Gate-to-Source Voltage



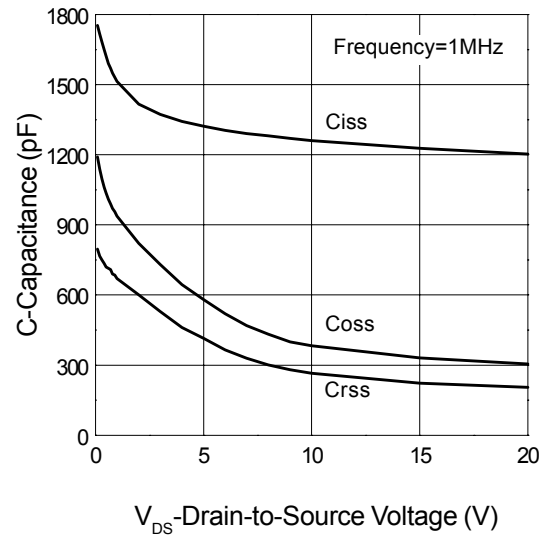
On-Resistance vs. Junction Temperature



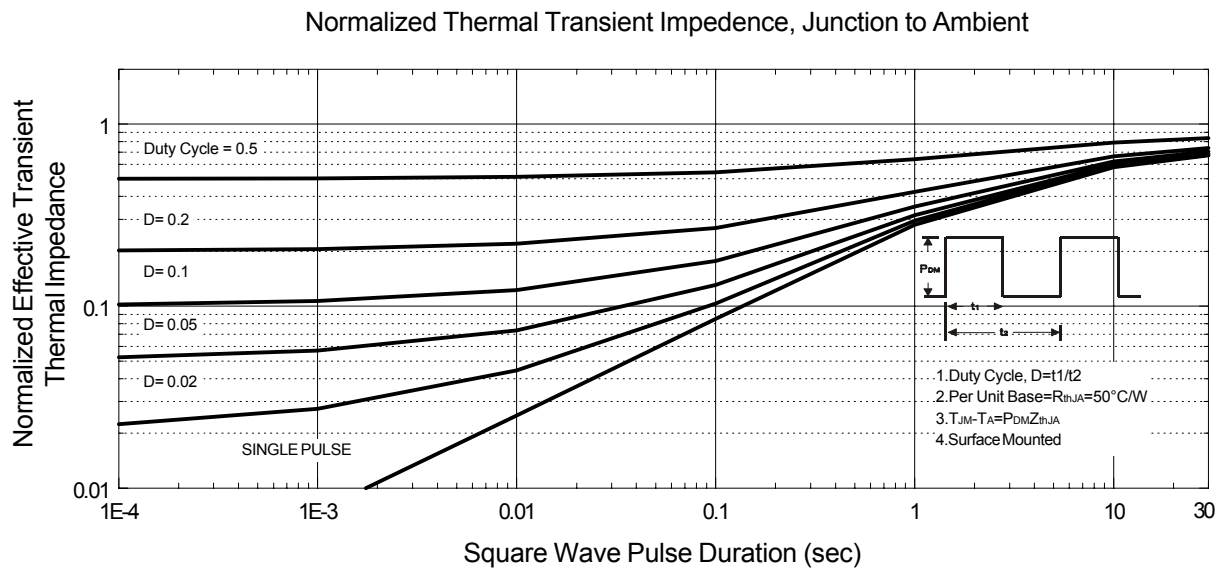
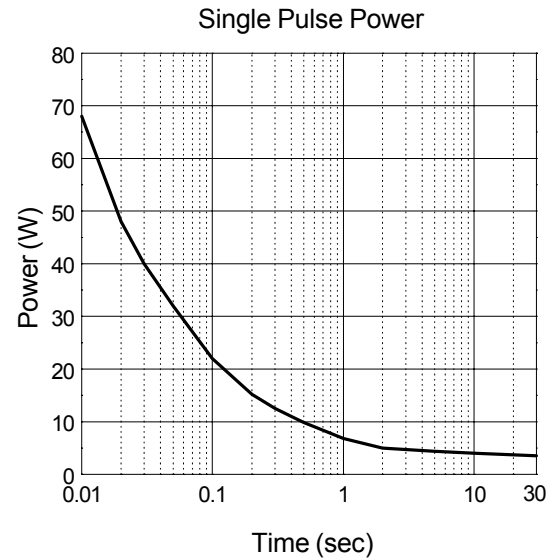
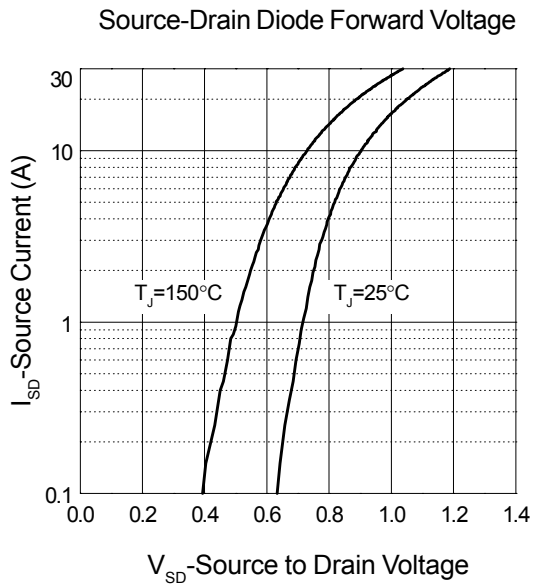
Gate Charge



Capacitance Characteristics

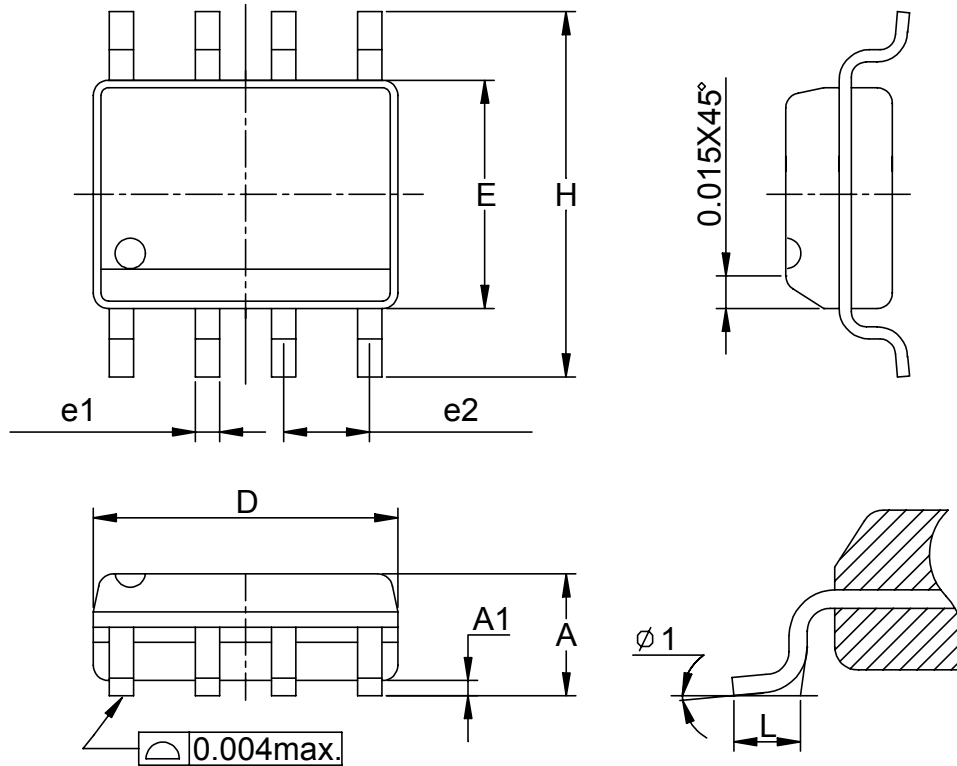


Typical Characteristics (Cont.)



Packaging Information

SOP-8 pin (Reference JEDEC Registration MS-012)



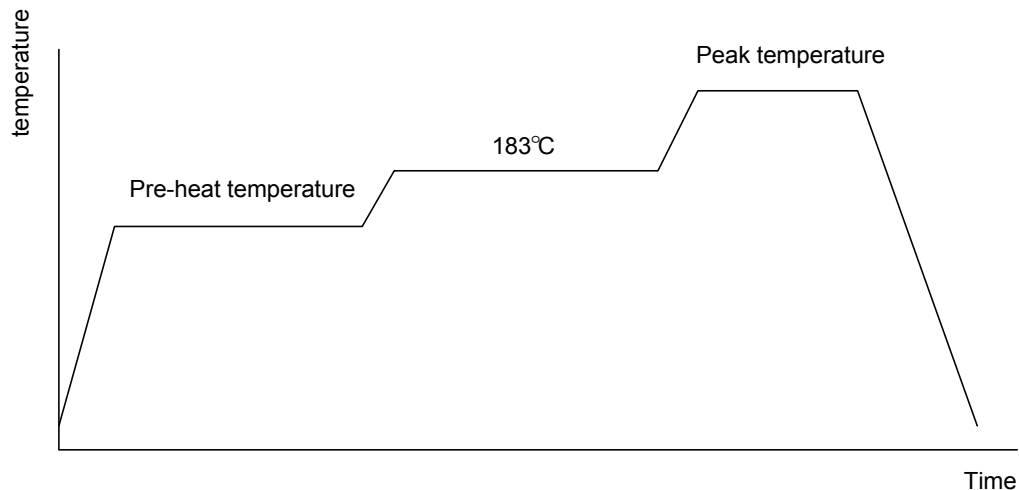
Dim	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
D	4.80	5.00	0.189	0.197
E	3.80	4.00	0.150	0.157
H	5.80	6.20	0.228	0.244
L	0.40	1.27	0.016	0.050
e1	0.33	0.51	0.013	0.020
e2	1.27BSC		0.50BSC	
φ 1	8°		8°	

Physical Specifications

Terminal Material	Solder-Plated Copper (Solder Material : 90/10 or 63/37 SnPb)
Lead Solderability	Meets EIA Specification RSI86-91, ANSI/J-STD-002 Category 3.

Reflow Condition (IR/Convection or VPR Reflow)

Reference JEDEC Standard J-STD-020A APRIL 1999



Classification Reflow Profiles

	Convection or IR/ Convection	VPR
Average ramp-up rate(183°C to Peak)	3°C/second max.	10 °C /second max.
Preheat temperature 125 ± 25°C)	120 seconds max	
Temperature maintained above 183°C	60 – 150 seconds	
Time within 5°C of actual peak temperature	10 –20 seconds	60 seconds
Peak temperature range	220 +5/-0°C or 235 +5/-0°C	215-219°C or 235 +5/-0°C
Ramp-down rate	6 °C /second max.	10 °C /second max.
Time 25°C to peak temperature	6 minutes max.	

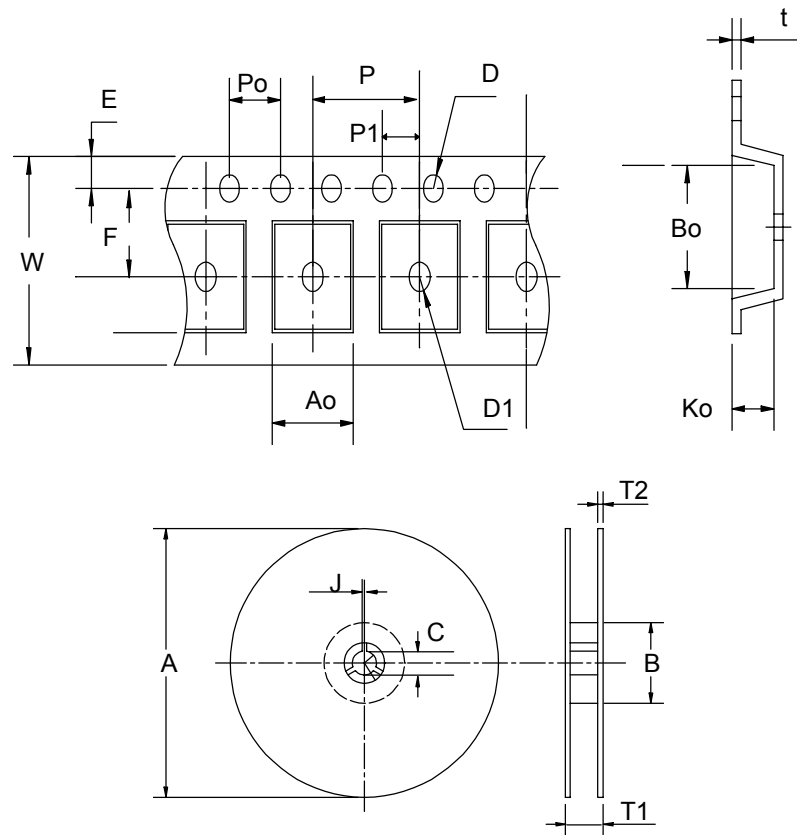
Package Reflow Conditions

pkg. thickness ≥ 2.5mm and all bgas	pkg. thickness < 2.5mm and pkg. volume ≥ 350 mm ³	pkg. thickness < 2.5mm and pkg. volume < 350mm ³
Convection 220 +5/-0 °C		Convection 235 +5/-0 °C
VPR 215-219 °C		VPR 235 +5/-0 °C
IR/Convection 220 +5/-0 °C		IR/Convection 235 +5/-0 °C

Reliability test program

Test item	Method	Description
SOLDERABILITY	MIL-STD-883D-2003	245°C, 5 SEC
HOLT	MIL-STD 883D-1005.7	1000 Hrs Bias @ 125°C
PCT	JESD-22-B, A102	168 Hrs, 100% RH, 121°C
TST	MIL-STD 883D-1011.9	-65°C ~ 150°C, 200 Cycles

Carrier Tape & Reel Dimensions



Application	A	B	C	J	T1	T2	W	P	E
SOP-8	330±1	62 ± 1.5	12.75 + 0.15	2 + 0.5	12.4 +0.2	2± 0.2	12 + 0.3 - 0.1	8± 0.1	1.75± 0.1
Application	F	D	D1	Po	P1	Ao	Bo	Ko	t
SOP-8	5.5 ± 0.1	1.55±0.1	1.55+ 0.25	4.0 ± 0.1	2.0 ± 0.1	6.4 ± 0.1	5.2± 0.1	2.1± 0.1	0.3±0.013

(mm)

Cover Tape Dimensions

Application	Carrier Width	Cover Tape Width	Devices Per Reel
SOP- 8	12	9.3	2500

Customer Service

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