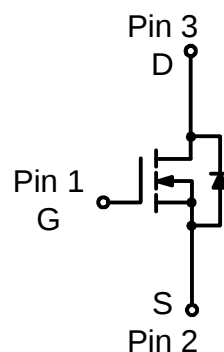
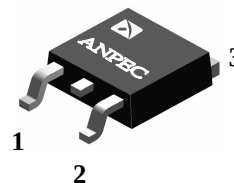


N-Channel Enhancement Mode MOSFET

Features

- 25V/30A,
 $R_{DS(ON)} = 15m\Omega$ (typ.) @ $V_{GS} = 10V$
 $R_{DS(ON)} = 22m\Omega$ (typ.) @ $V_{GS} = 4.5V$
- Super High Dense Cell Design
- Avalanche Rated
- Reliable and Rugged
- Lead Free Available (RoHS Compliant)

Pin Description



Applications

- Power Management in Desktop Computer or DC/DC Converters

Ordering and Marking Information

APM2522N □□-□□□ Lead Free Code Handling Code Temp. Range Package Code	Package Code U : TO-252 Operating Junction Temp. Range C : -55 to 150 °C Handling Code TU : Tube TR : Tape & Reel Lead Free Code L : Lead Free Device Blank : Original Device
APM2522N U : 	XXXXX - Date Code

Note: ANPEC lead-free products contain molding compounds and 100% matte tin plate termination finish; which are fully compliant with RoHS and compatible with both SnPb and lead-free soldering operations. ANPEC lead-free products meet or exceed the lead-free requirements of IPC/JEDEC J STD-020C for MSL classification at lead-free peak reflow temperature.

ANPEC reserves the right to make changes to improve reliability or manufacturability without notice, and advise customers to obtain the latest version of relevant information to verify before placing orders.

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T _A = 25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		25	V
V _{GSS}	Gate-Source Voltage		±20	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	°C
I _S	Diode Continuous Forward Current	T _C =25°C	20	A
I _{DP}	300μs Pulse Drain Current Tested	T _C =25°C	100	A
		T _C =100°C	70	
Mounted on Large Heat Sink				
I _D	Continuous Drain Current	T _C =25°C	30*	A
		T _C =100°C	20	
P _D	Maximum Power Dissipation	T _C =25°C	50	W
		T _C =100°C	20	
R _{θJC}	Thermal Resistance-Junction to Case		2.5	°C/W
Mounted on PCB of 1in ² Pad Area				
I _D	Continuous Drain Current	T _A =25°C	9	A
		T _A =100°C	6	
P _D	Maximum Power Dissipation	T _A =25°C	2.5	W
		T _A =100°C	1	
R _{θJA}	Thermal Resistance-Junction to Ambient		50	°C/W
Mounted on PCB of Minimum Footprint				
I _D	Continuous Drain Current	T _A =25°C	7	A
		T _A =100°C	4	
P _D	Maximum Power Dissipation	T _A =25°C	1.5	°C/W
		T _A =100°C	0.5	
R _{θJA}	Thermal Resistance-Junction to Ambient		75	°C/W

Notes :

* Current limited by bond wire.

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

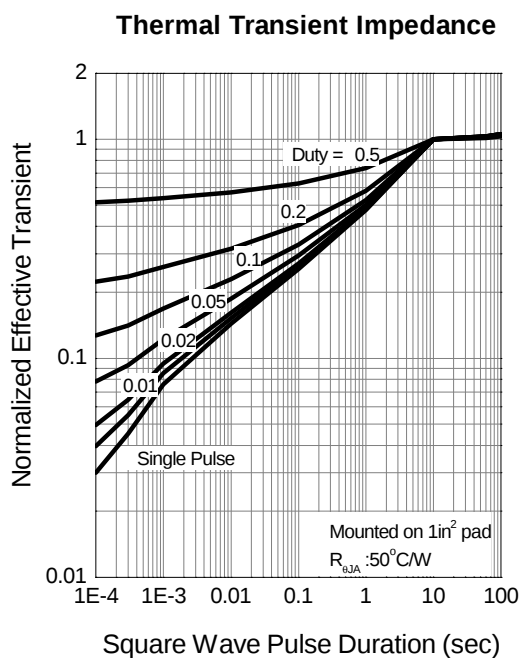
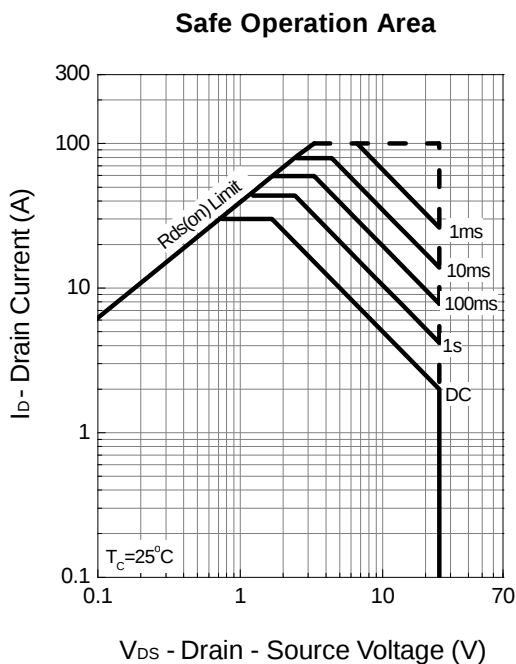
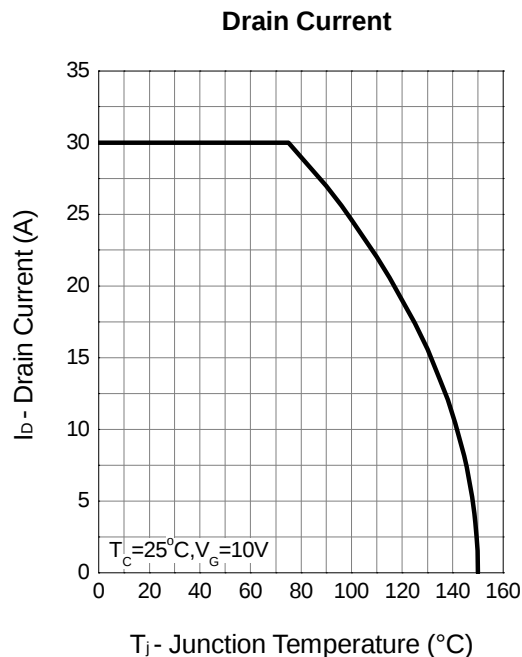
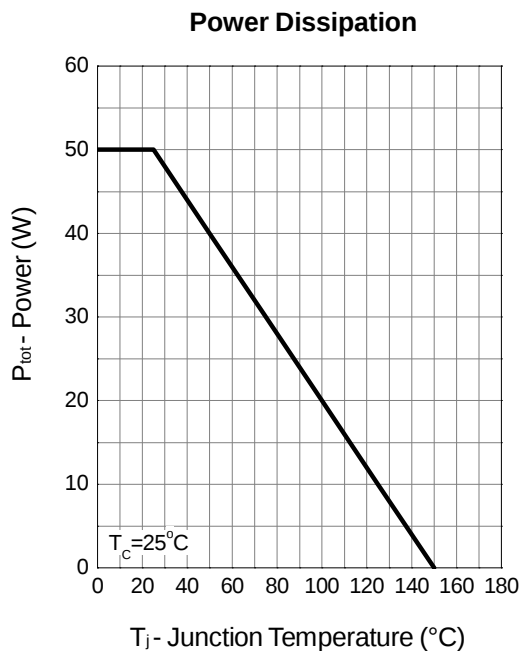
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	25			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =20V, V _{GS} =0V T _J =85°C			1 30	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1	1.5	2.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V			±100	nA
R _{DS(ON)} ^a	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =20A V _{GS} =4.5V, I _{DS} =10A		15 22	20 28	mΩ
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} =10A, V _{GS} =0V		0.7	1.1	V
t _{rr}	Reverse Recovery Time	I _{SD} =10A, dI _{SD} /dt =100A/μs		50		ns
Q _{rr}	Reverse Recovery Charge			3		nC
Dynamic Characteristics ^b						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		2		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, Frequency=1.0MHz		825		pF
C _{oss}	Output Capacitance			125		
C _{rss}	Reverse Transfer Capacitance			85		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =15V, R _L =15Ω, I _{DS} =1A, V _{GEN} =10V, R _G =6Ω		13	24	ns
t _r	Turn-on Rise Time			19	35	
t _{d(OFF)}	Turn-off Delay Time			31	57	
t _f	Turn-off Fall Time			5	10	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =10V, I _{DS} =20A		17	24	nC
Q _{gs}	Gate-Source Charge			2		
Q _{gd}	Gate-Drain Charge			5		

Notes:

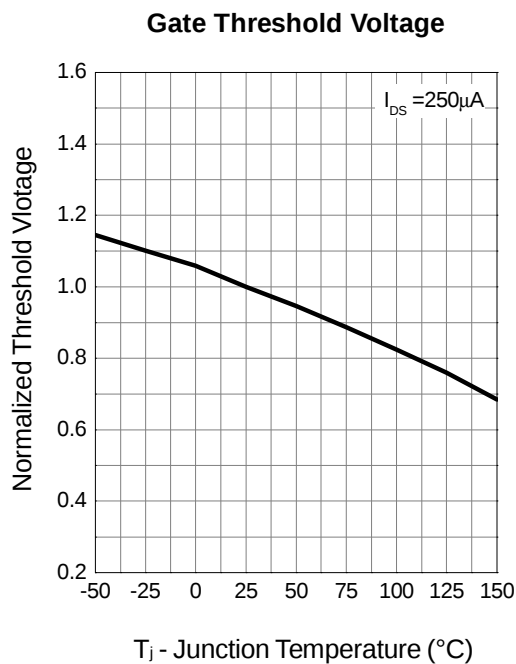
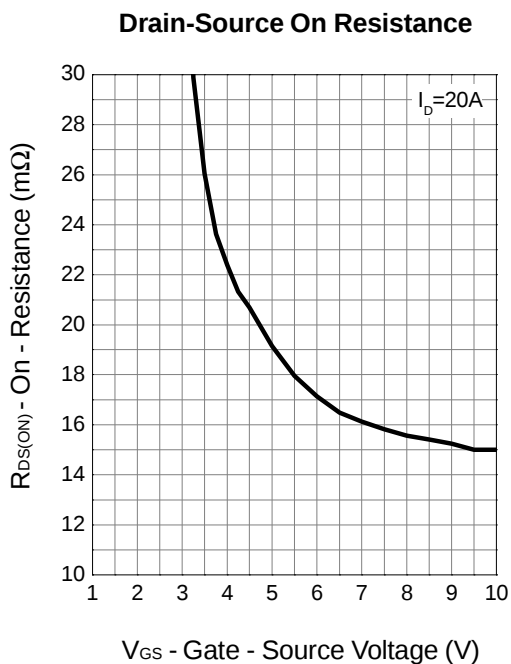
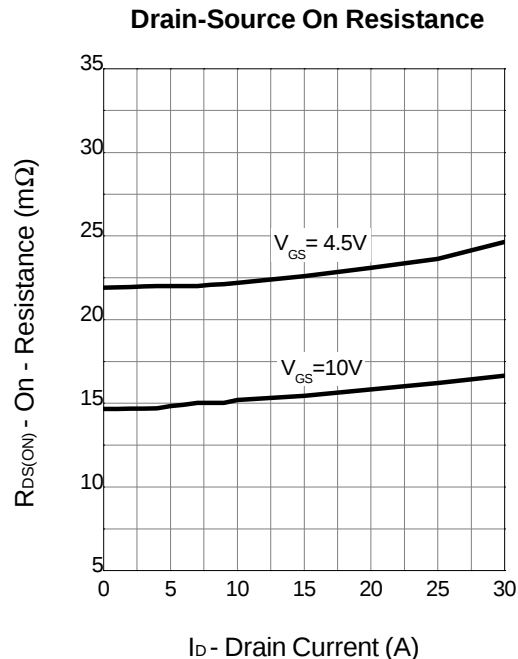
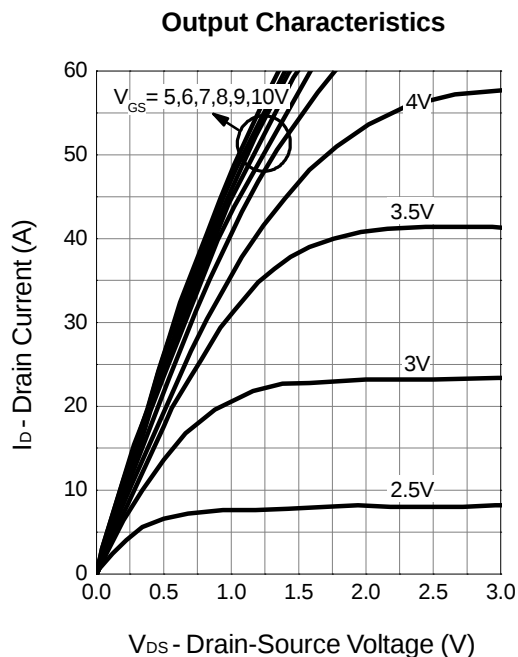
a : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

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

Typical Characteristics

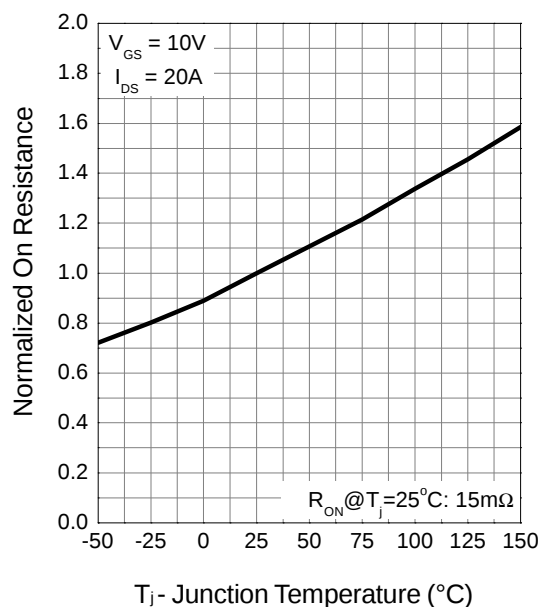


Typical Characteristics (Cont.)

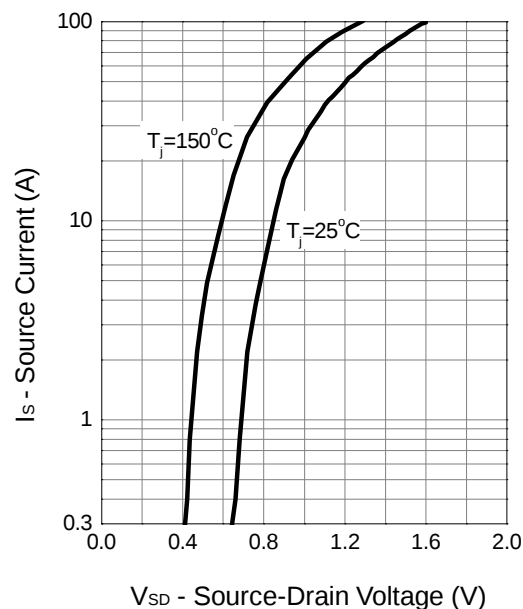


Typical Characteristics (Cont.)

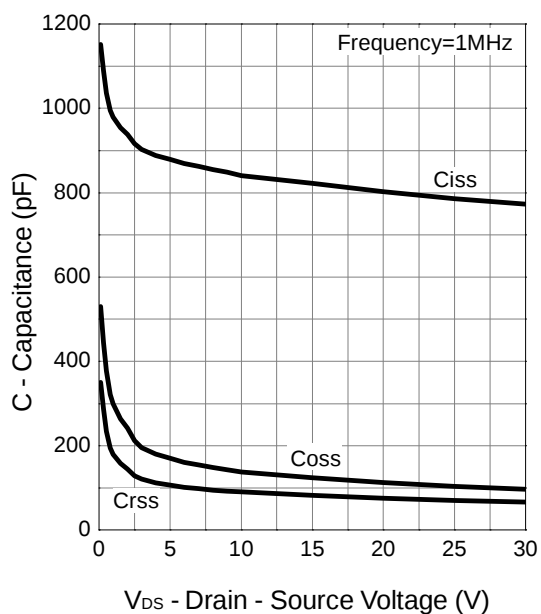
Drain-Source On Resistance



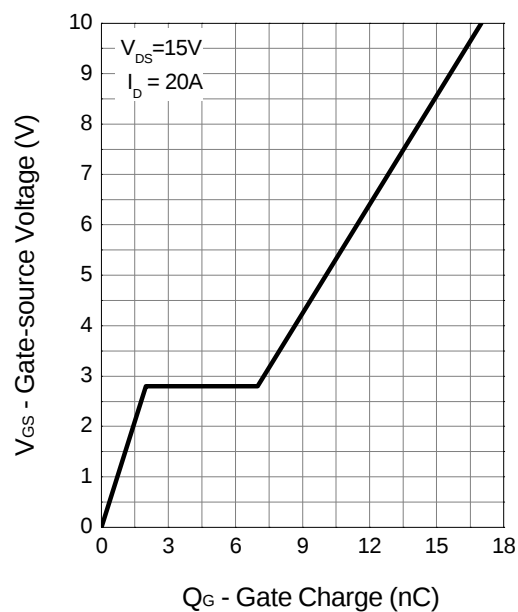
Source-Drain Diode Forward



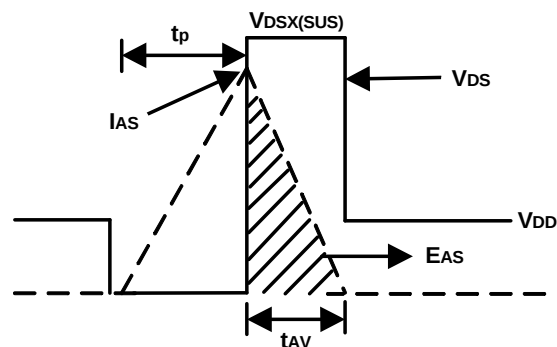
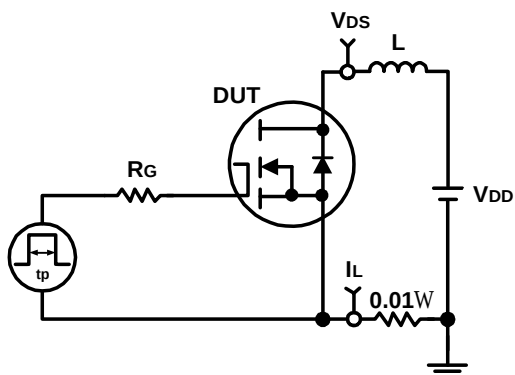
Capacitance



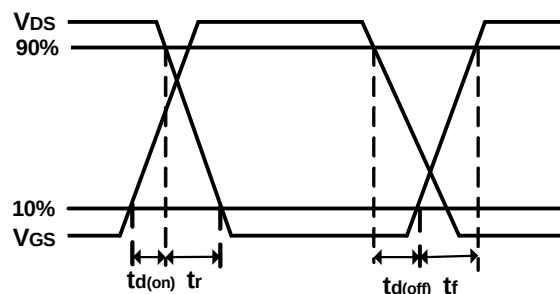
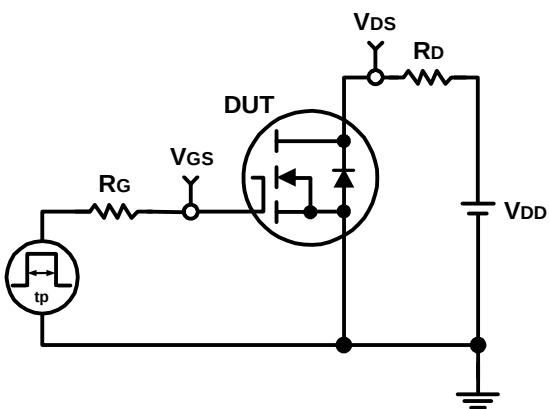
Gate Charge



Avalanche Test Circuit and Waveforms

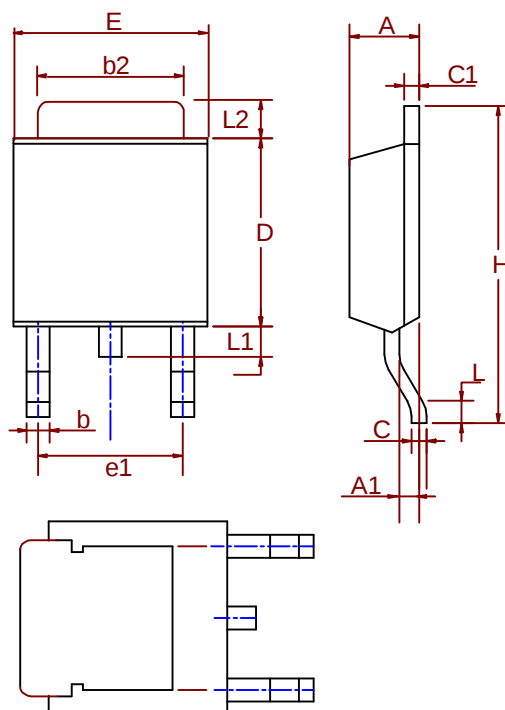


Avalanche Test Circuit and Waveforms



Packaging Information

TO-252 (Reference JEDEC Registration TO-252)

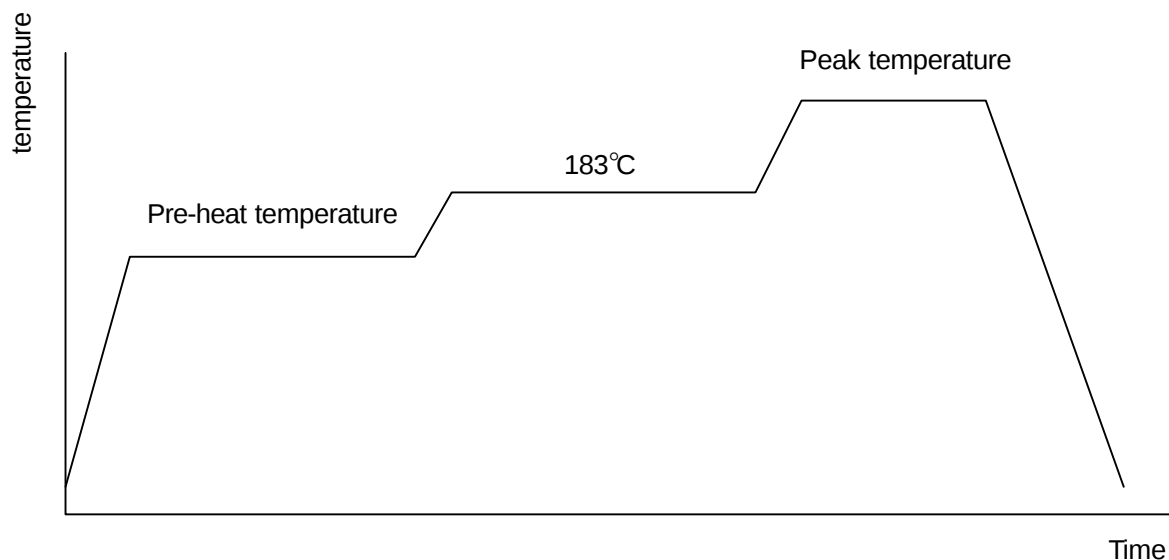


Dim	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.18	2.39	0.086	0.094
A1	0.89	1.27	0.035	0.050
b	0.508	0.89	0.020	0.035
b2	5.207	5.461	0.205	0.215
C	0.46	0.58	0.018	0.023
C1	0.46	0.58	0.018	0.023
D	5.334	6.22	0.210	0.245
E	6.35	6.73	0.250	0.265
e1	3.96	5.18	0.156	0.204
H	9.398	10.41	0.370	0.410
L	0.51		0.020	
L1	0.64	1.02	0.025	0.040
L2	0.89	2.032	0.035	0.080

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)



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°C/-0°C	215~ 219 °C or 235 +5°C/-0°C
Ramp-down rate	6°C /second max.	10°C /second max.
Time 25°C to peak temperature	6 minutes max.	

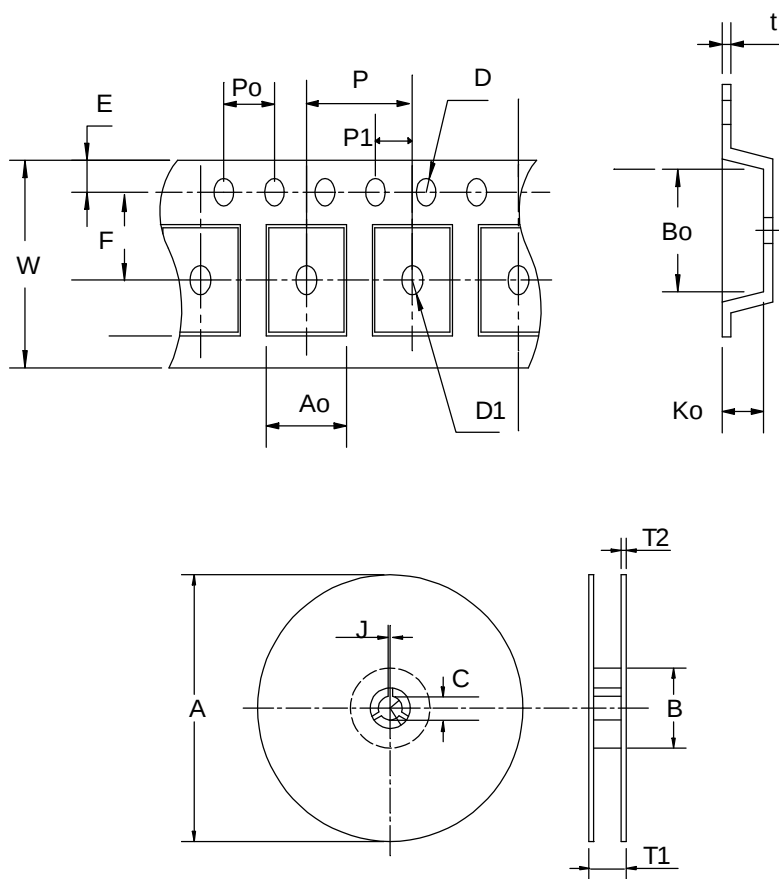
Classification Reflow Profiles

pkg. thickness ≥ 2.5mm and all bags	pkg. thickness < 2.5mm and pkg. volume ≥ 350mm 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 220 +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
TO-252	330±3	100±2	13±0.5	2±0.5	16.4+0.3 -0.2	2.5±0.5	16+0.3 16-0.1	8±0.1	1.75±0.1
	F	D	D1	P0	P1	A0	Bo	Ko	t
	7.5±0.1	1.5±0.1	1.5±0.25	4.0±0.1	2.0±0.1	6.8±0.1	10.4±0.1	2.5±0.1	0.3±0.05

(mm)

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