

P-Channel Enhancement Mode Power MOSFET

Features

- Low On Resistance
- Low Gate Charge
- Fast Switching Characteristic
- Pb-free lead plating and halogen-free

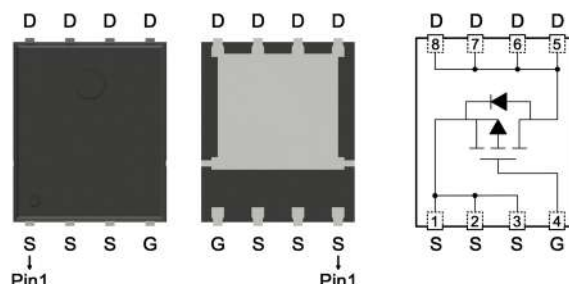
Product Summary

BV_{DSS}	-100	V
$R_{DS(ON)}$ typ. @ $V_{GS}=-10V$, $I_D=-15A$	10.5	mΩ
$R_{DS(ON)}$ typ. @ $V_{GS}=-4.5V$, $I_D=-10A$	14	
I_D @ $V_{GS}=-10V$, $T_C=25^\circ C$	-62	A
I_D @ $V_{GS}=-10V$, $T_A=25^\circ C$	-11	

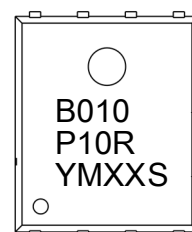
Ordering Information

Device	Package	Shipping
KPRB010P10R	DFN5×6	3000pcs / Tape & Reel

DFN5×6



Marking



Device Code

Date Code,
Assembly site code

YMXXS: Date Code & Assembly site code Marking

Y: Year Code, the last digit of Christian year

M: Month Code

A: Jan	B: Feb	C: Mar	D: Apr	E: May	F: Jun
G: Jul	H: Aug	J: Sep	K: Oct	L: Nov	M: Dec

XX: Production Serial Number, 01~99

S: Assembly site code, Site 1: G

Absolute Maximum Ratings ($T_A=25^\circ C$)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-100	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current @ $V_{GS}=-10V$, $T_C=25^\circ C$	I_D	-62	A
Continuous Drain Current @ $V_{GS}=-10V$, $T_C=100^\circ C$		-39	
Continuous Drain Current @ $V_{GS}=-10V$, $T_A=25^\circ C$		-11	
Continuous Drain Current @ $V_{GS}=-10V$, $T_A=70^\circ C$		-8.8	
Pulsed Drain Current	I_{DM}	-248	
Continuous Body Diode Forward Current @ $T_C=25^\circ C$	I_S	-62	
Pulsed Body Diode Forward Current @ $T_C=25^\circ C$	I_{SM}	-248	
Avalanche Current @ $L=0.1mH$	I_{AS}	-35	
Avalanche Energy @ $L=0.5mH$	E_{AS}	132	mJ
Total Power Dissipation	P_D	104	W
		42	
		3.1	
		2	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55~+150	$^\circ C$
Steady State Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.2	$^\circ C/W$
Steady State Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	40	

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

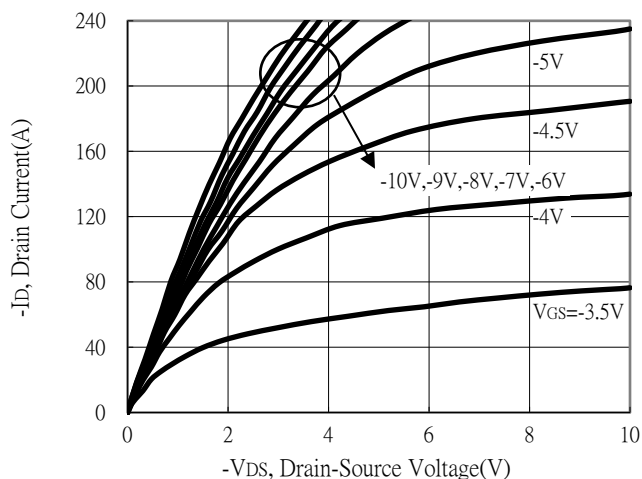
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	-100	-	-	V	V _{GS} =0V, I _D =-250μA
V _{GS(th)}	-1	-	-2.5		V _{DS} =V _{GS} , I _D =-250μA
G _{FS}	-	36	-	S	V _{DS} =-10V, I _D =-10A
I _{GSS}	-	-	±100	nA	V _{GS} =±20V, V _{DS} =0V
I _{DSS}	-	-	-1	μA	V _{DS} =-80V, V _{GS} =0V
R _{DS(ON)}	-	10.5	14	mΩ	V _{GS} =-10V, I _D =-15A
	-	14	20		V _{GS} =-4.5V, I _D =-10A
Dynamic					
C _{iss}	-	5925	-	pF	V _{DS} =-50V, V _{GS} =0V, f=1MHz
C _{oss}	-	830	-		
C _{rss}	-	45	-		
R _g	-	2	-	Ω	f=1MHz
Q _g *d,e	-	50	-	nC	V _{DS} =-50V, I _D =-15A, V _{GS} =-4.5V
Q _g *d,e	-	101	-		V _{DS} =-50V, I _D =-15A, V _{GS} =-10V
Q _{gs} *d,e	-	20	-		
Q _{gd} *d,e	-	19	-		
t _{d(ON)} *d,e	-	21	-	ns	V _{DS} =-50V, I _D =-15A, V _{GS} =-10V, R _{GS} =1Ω
tr *d,e	-	34	-		
t _{d(OFF)} *d,e	-	86	-		
t _f *d,e	-	24	-		
Source-Drain Diode					
V _{SD} *d	-	-0.83	-1.2	V	I _S =-15A, V _{GS} =0V
t _{rr}	-	55	-	ns	I _F =-15A, di/dt=100A/μs
Q _{rr}	-	85	-	nC	

Note:

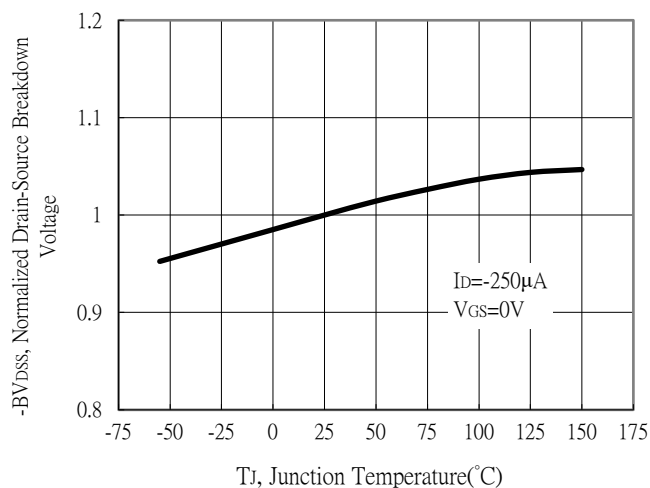
- *a. The power dissipation P_D is based on $T_{J(MAX)}=150^\circ\text{C}$, using junction-to-case thermal resistance, and is more useful in setting the upper Dissipation.
- *b. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz copper, in a still air environment with $T_A=25^\circ\text{C}$. The power dissipation P_D is based on $R_{\theta JA}$ and the maximum allowed junction temperature of 150°C . The value in any given application depends on the user's specific board design.
- *c. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^\circ\text{C}$. Ratings are based on low frequency and low duty cycles to keep initial $T_J=25^\circ\text{C}$.
- *d. Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
- *e. Independent of operating temperature.

Typical Characteristics

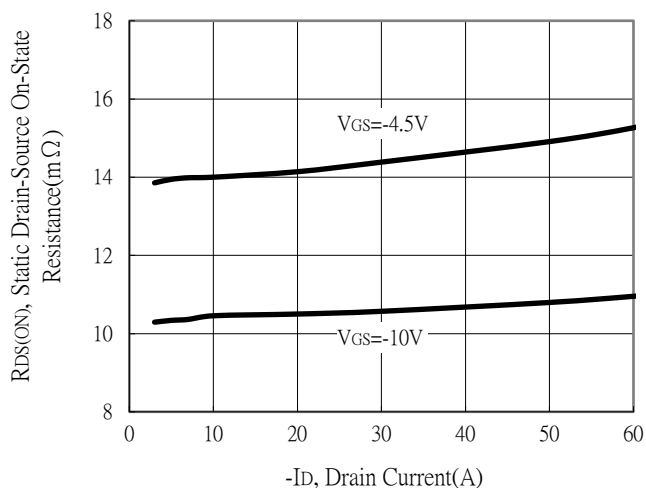
Typical Output Characteristics



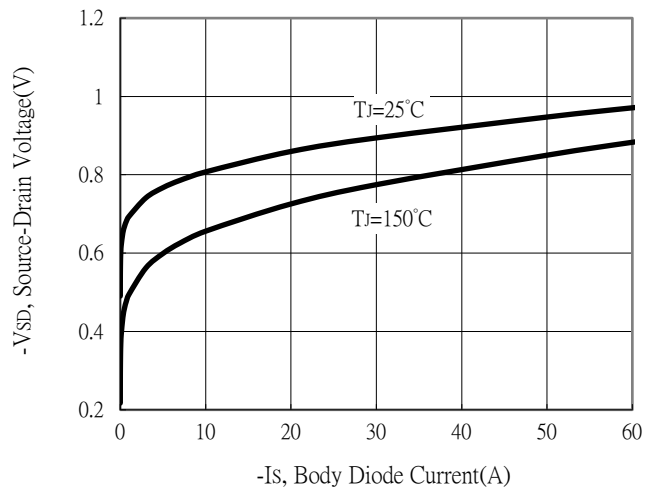
Breakdown Voltage vs Ambient Temperature



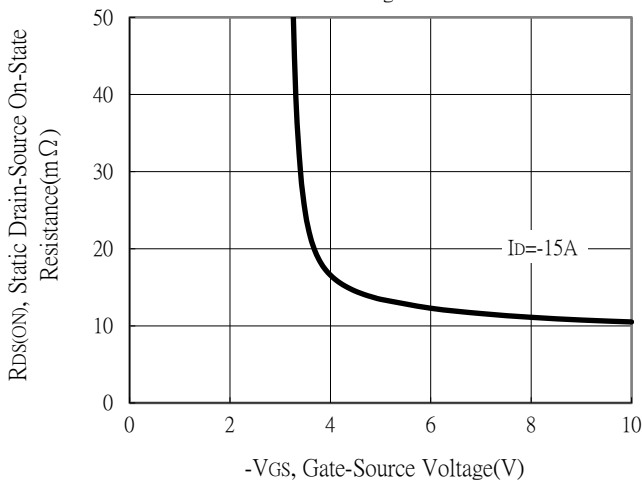
Static Drain-Source On-State resistance vs Drain Current



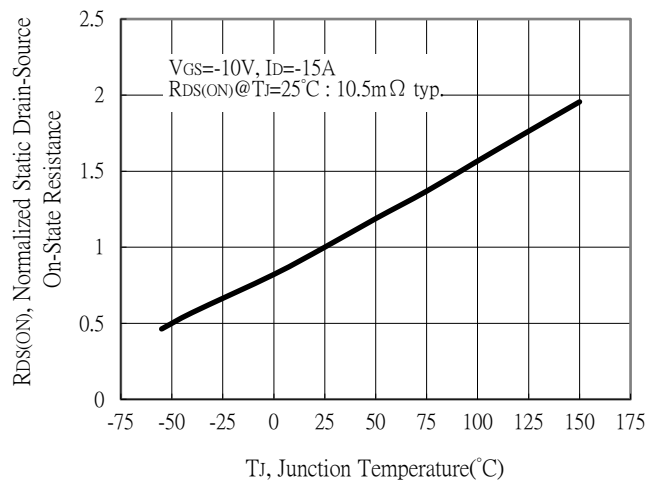
Body Diode Current vs Source-Drain Voltage



Static Drain-Source On-State Resistance vs Gate-Source Voltage

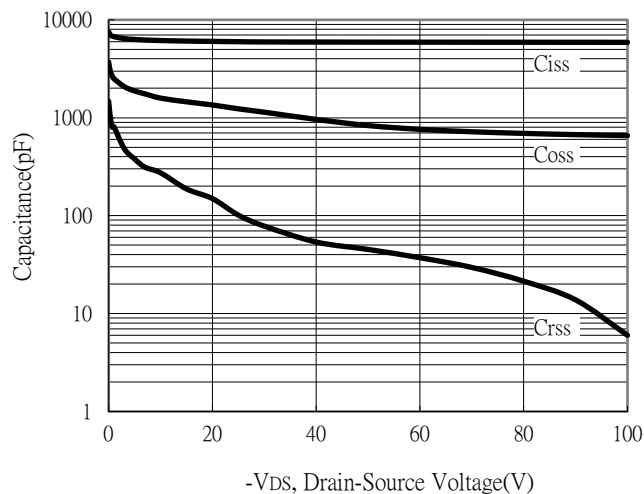


Drain-Source On-State Resistance vs Junction Temperature

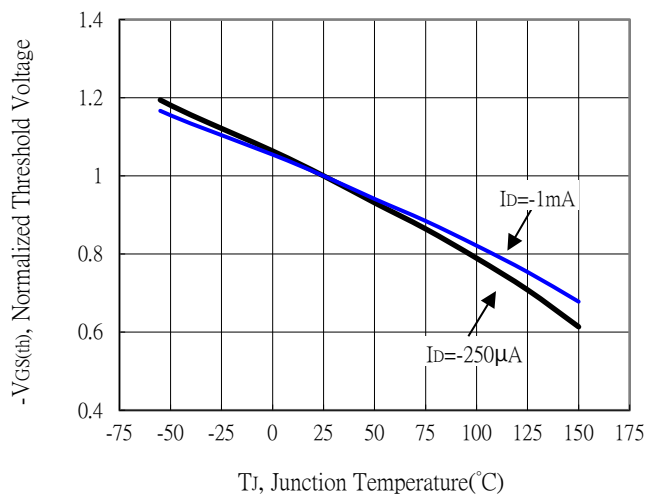


Typical Characteristics

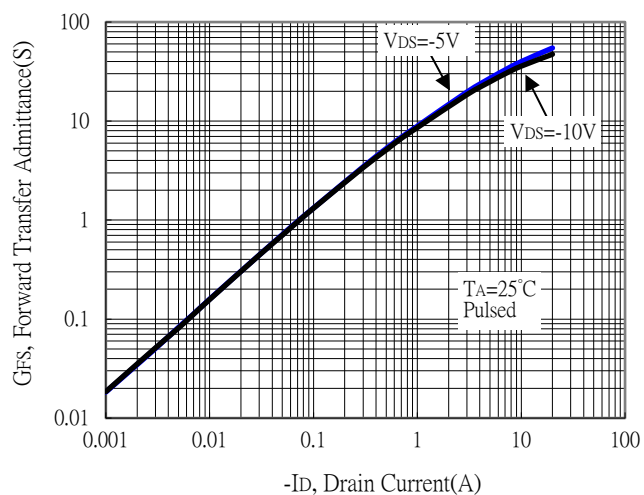
Capacitance vs Drain-to-Source Voltage



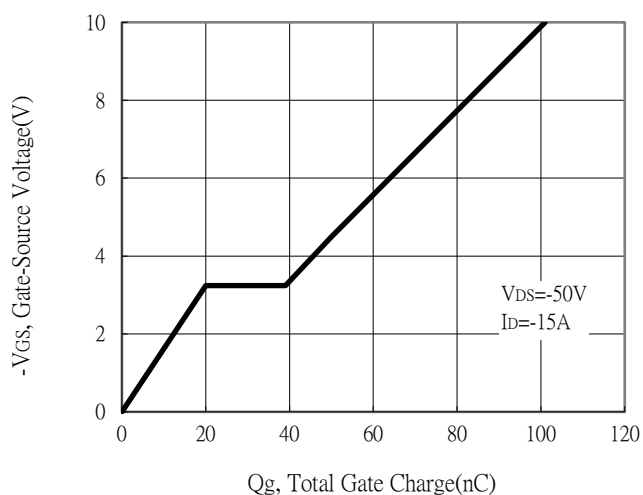
Threshold Voltage vs Junction Temperature



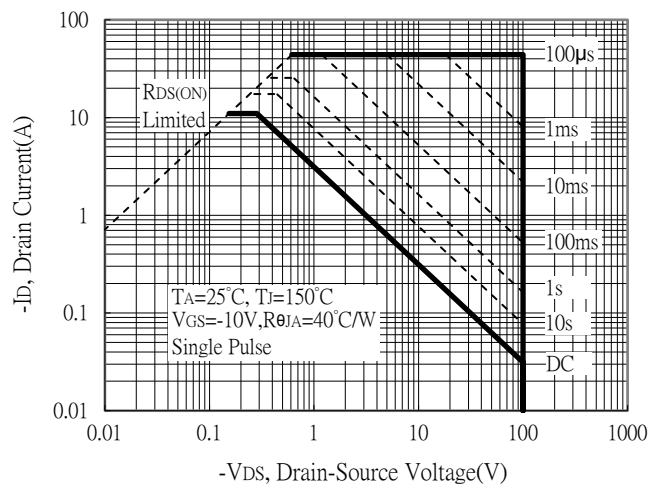
Forward Transfer Admittance vs Drain Current



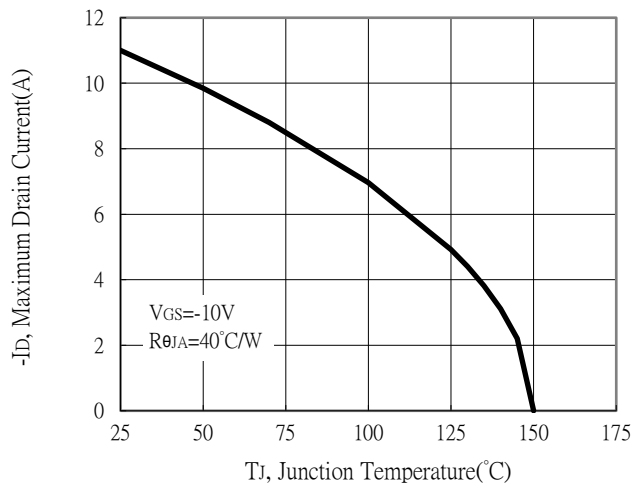
Gate Charge Characteristics



Maximum Safe Operating Area

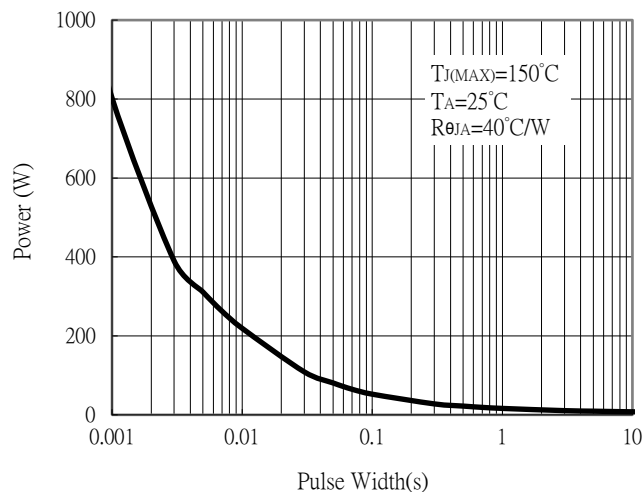


Maximum Drain Current vs Junction Temperature

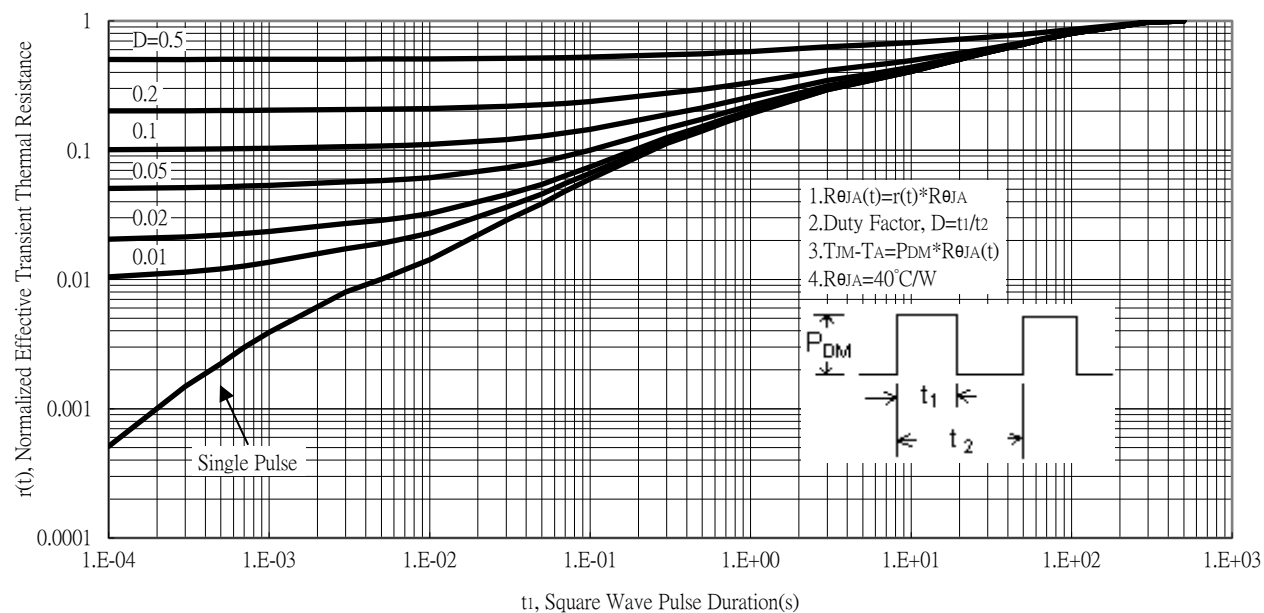


Typical Characteristics

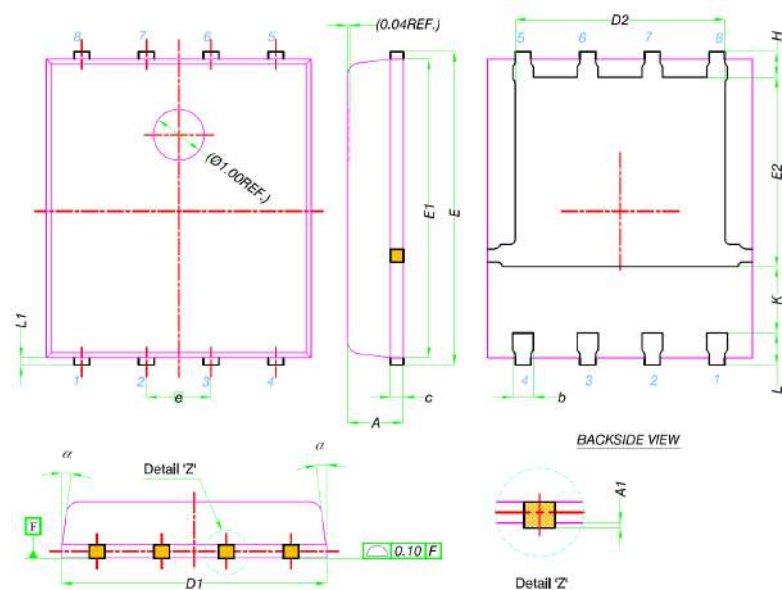
Single Pulse Power Rating, Junction to Ambient



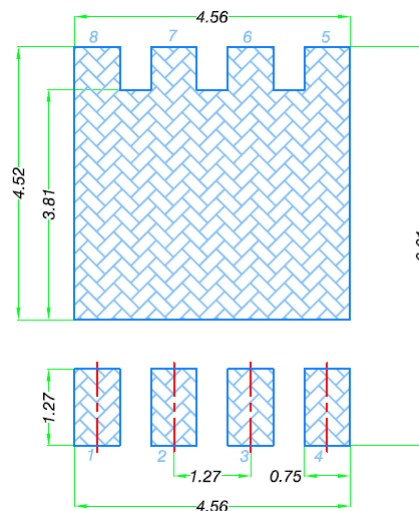
Transient Thermal Response Curves



DFN5×6 Dimension



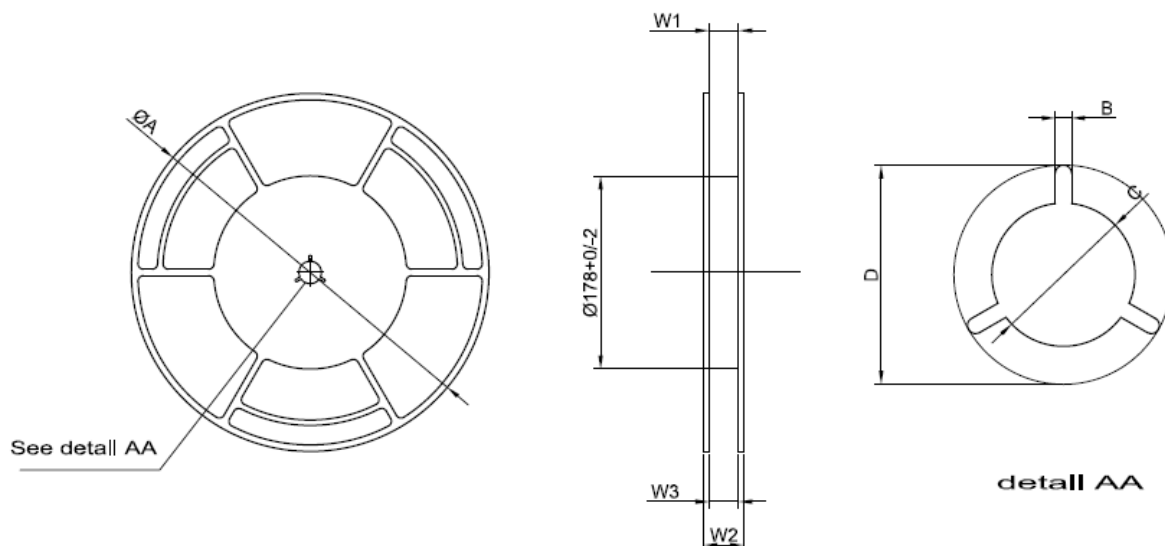
8-Lead DFN5×6 Plastic Package
 Package Code: H8



Recommended Soldering Footprint

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	1.00	1.20	0.039	0.047	E2	3.52	3.92	0.138	0.154
A1	0.00	0.05	0.000	0.001	e	1.27	BSC	0.05	BSC
b	0.33	0.50	0.012	0.019	H	0.40	0.60	0.015	0.023
c	0.20	0.30	0.007	0.011	K	1.10	-	0.043	-
D1	5.00	5.40	0.196	0.212	L	0.50	0.70	0.019	0.027
D2	3.80	4.25	0.149	0.167	L1	0.08	0.22	0.003	0.008
E	6.00	6.30	0.236	0.248	α	0°	12°	0°	12°
E1	5.76	5.96	0.226	0.234					

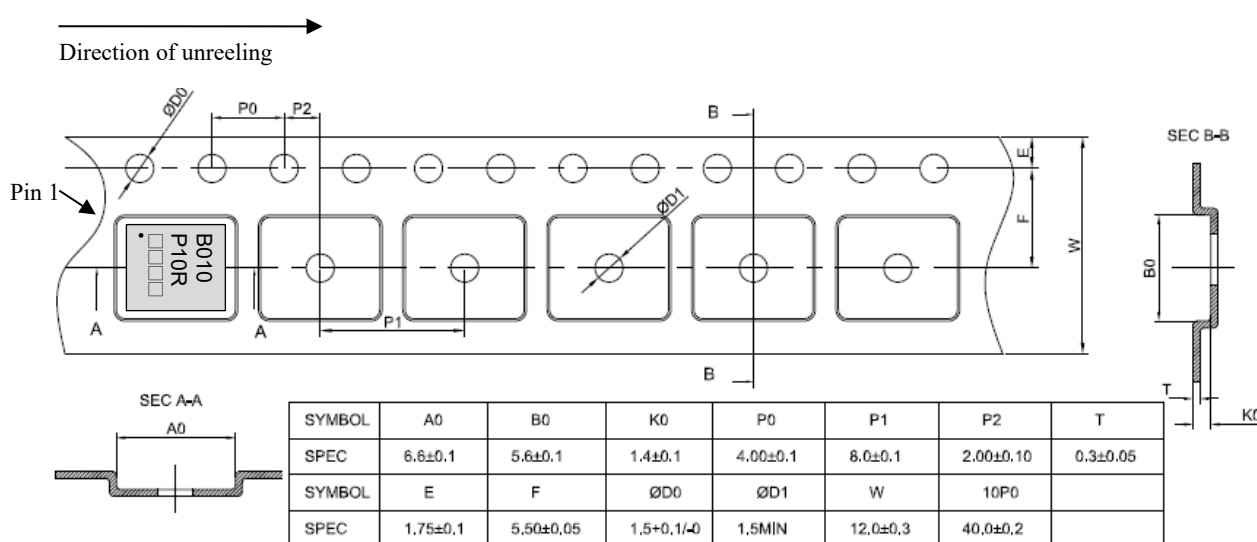
Reel Dimension



TAPE SIZE	A	B	C	D	W1	W2	W3
12mm	330 ± 2.0	2.9 ± 0.5	$13.0 \pm 0.5/-0$	23 ± 1.0	$12.4 \pm 2/-0$	18.4 ± 0.5	12~15

Unit : mm

Carrier Tape Dimension

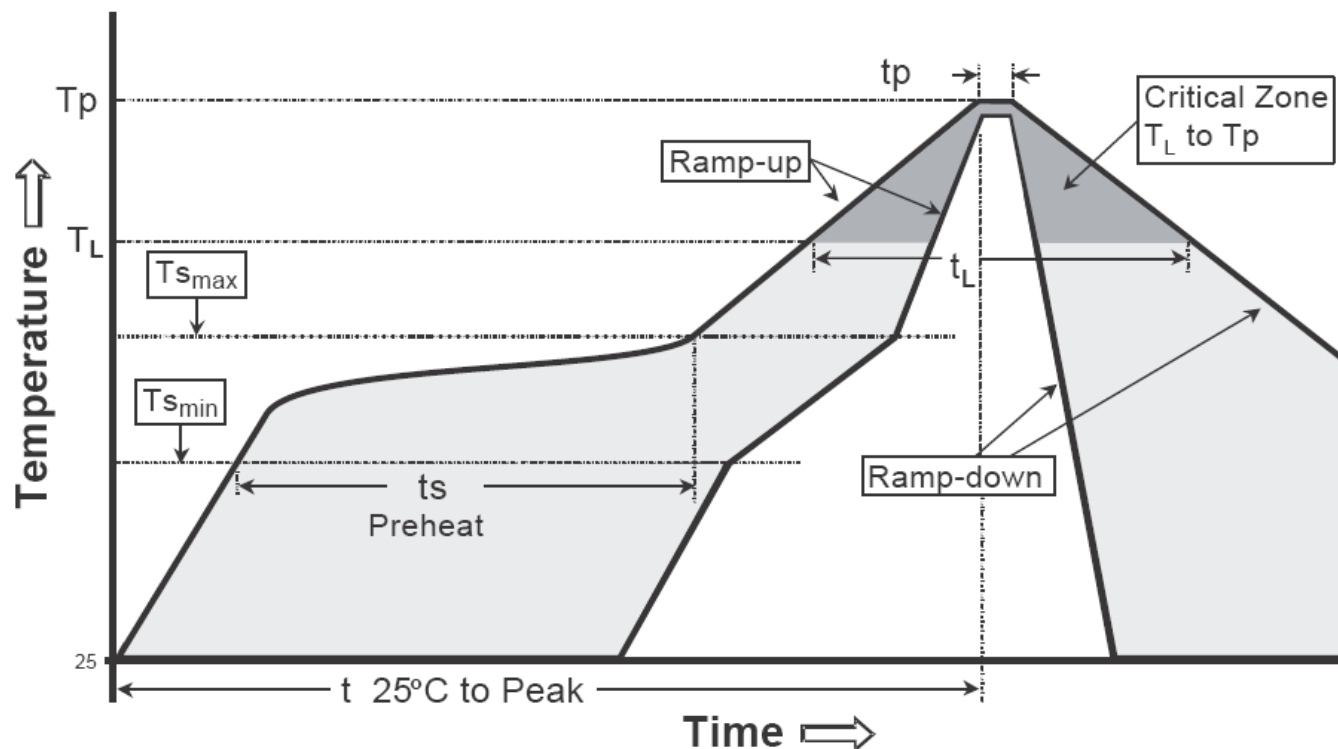


Unit : mm

Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (TS max to TP)	3°C/second max.	3°C/second max.
Preheat -Temperature Min (TS min) -Temperature Max (TS max) -Time (ts min to ts max)	100°C 150°C 60-120 seconds	150°C 200°C 60-180 seconds
Time maintained above: -Temperature (TL) -Time (tL)	183°C 60-150 seconds	217°C 60-150 seconds
Peak Temperature (TP)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature (tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note:

- All temperatures refer to topside of the package, measured on the package body surface.