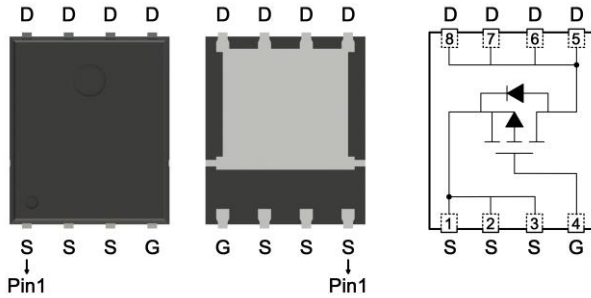


## Product Summary

$BV_{DS}$	-30	V
$R_{DS(ON)}$ typ. @ $V_{GS}=-10V, I_D=-15A$	6.1	mΩ
$R_{DS(ON)}$ typ. @ $V_{GS}=-4.5V, I_D=-10A$	11	
$I_D$ @ $V_{GS}=-10V, T_C=25^\circ C$	-60	A
$I_D$ @ $V_{GS}=-10V, T_A=25^\circ C$	-14	

## DFN5×6



## Features

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

## 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, Site 2: A

## Ordering Information

Device	Package	Shipping
MTD7D0P03H8-0-T6-G	DFN5×6	3000pcs / Tape & Reel

0: Product rank, zero for no rank products.

T6: Packing spec, T6 : 3000pcs / tape & reel, 13" reel

G: Environment friendly grade: S for RoHS compliant products, G for RoHS compliant and green compound products.

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

Parameter	Symbol	Value	Unit	
Drain-Source Voltage	$V_{DS}$	-30	V	
Gate-Source Voltage	$V_{GS}$	±25		
Continuous Drain Current @ $V_{GS}=-10V, T_C=25^\circ C$ (silicon limit)	$I_D$	-68	A	
Continuous Drain Current @ $V_{GS}=-10V, T_C=25^\circ C$ (package limit)		-60		
Continuous Drain Current @ $V_{GS}=-10V, T_C=100^\circ C$		-43		
Continuous Drain Current @ $V_{GS}=-10V, T_A=25^\circ C$		-14		
Continuous Drain Current @ $V_{GS}=-10V, T_A=70^\circ C$		-11		
Pulsed Drain Current		$I_{DM}$		-240
Continuous Body Diode Forward Current @ $T_C=25^\circ C$	$I_S$	-57		
Pulsed Body Diode Forward Current @ $T_C=25^\circ C$	$I_{SM}$	-228		
Avalanche Current @ $L=0.1mH$	$I_{AS}$	-30		
Avalanche Energy @ $L=0.5mH$	$E_{AS}$	64	mJ	
Total Power Dissipation	$P_D$	$T_C=25^\circ C$	W	
		$T_C=100^\circ C$		28
		$T_A=25^\circ C$		2.8
		$T_A=70^\circ C$		1.8
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55~+150	$^\circ C$	
Steady State Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.8	$^\circ C/W$	
Steady State Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	45		



**Electrical Characteristics (T<sub>A</sub>=25°C, unless otherwise specified)**

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
<b>Static</b>					
BV <sub>DSS</sub>	-30	-	-	V	V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA
V <sub>GS(th)</sub>	-1	-	-2.5		V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA
G <sub>FS</sub>	-	23	-	S	V <sub>DS</sub> =-10V, I <sub>D</sub> =-15A
I <sub>GSS</sub>	-	-	±100	nA	V <sub>GS</sub> =±25V, V <sub>DS</sub> =0V
I <sub>DSS</sub>	-	-	-1	μA	V <sub>DS</sub> =-24V, V <sub>GS</sub> =0V
R <sub>DS(ON)</sub>	-	6.1	8	mΩ	V <sub>GS</sub> =-10V, I <sub>D</sub> =-15A
	-	11	15.5		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-10A
<b>Dynamic</b>					
C <sub>iSS</sub>	-	2300	-	pF	V <sub>DS</sub> =-15V, V <sub>GS</sub> =0V, f=1MHz
C <sub>oss</sub>	-	450	-		
C <sub>rSS</sub>	-	300	-		
R <sub>g</sub>	-	8	-	Ω	f=1MHz
Q <sub>g</sub> *d,e	-	23	-	nC	V <sub>DS</sub> =-15V, I <sub>D</sub> =-12A, V <sub>GS</sub> =-4.5V
Q <sub>g</sub> *d,e	-	44	-		
Q <sub>gs</sub> *d,e	-	6.6	-		
Q <sub>gd</sub> *d,e	-	10	-		
t <sub>d(ON)</sub> *d,e	-	12	-	ns	V <sub>DS</sub> =-15V, I <sub>D</sub> =-12A, V <sub>GS</sub> =-10V, R <sub>GS</sub> =6Ω
t <sub>r</sub> *d,e	-	22	-		
t <sub>d(OFF)</sub> *d,e	-	95	-		
t <sub>f</sub> *d,e	-	63	-		
<b>Source-Drain Diode</b>					
V <sub>SD</sub> *d	-	-0.82	-1.2	V	I <sub>S</sub> =-15A, V <sub>GS</sub> =0V
t <sub>rr</sub>	-	16	-	ns	I <sub>F</sub> =-12A, di/dt=100A/μs
Q <sub>rr</sub>	-	7	-	nC	

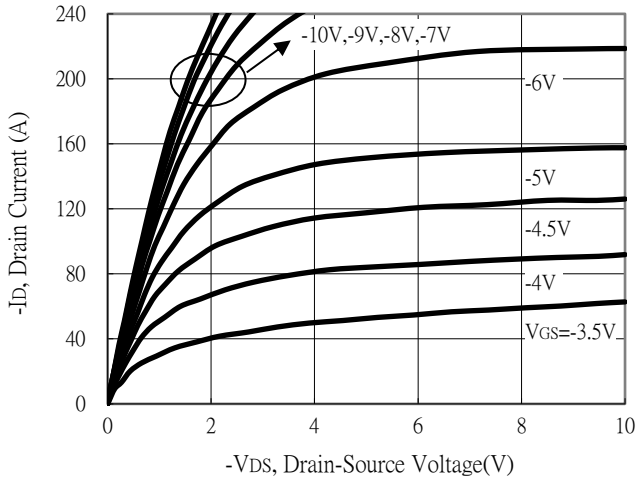
**Note:**

- \*a. The power dissipation P<sub>D</sub> is based on T<sub>J(MAX)</sub>=150°C, using junction-to-case thermal resistance, and is more useful in setting the upper Dissipation.
- \*b. The value of R<sub>θJA</sub> is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz copper, in a still air environment with T<sub>A</sub>=25°C. The power dissipation P<sub>D</sub> is based on R<sub>θJA</sub> 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<sub>J(MAX)</sub>=150°C. Ratings are based on low frequency and low duty cycles to keep initial T<sub>J</sub>=25°C.
- \*d. Pulse Test : Pulse Width≤300μs, Duty Cycle≤2%.
- \*e. Independent of operating temperature.

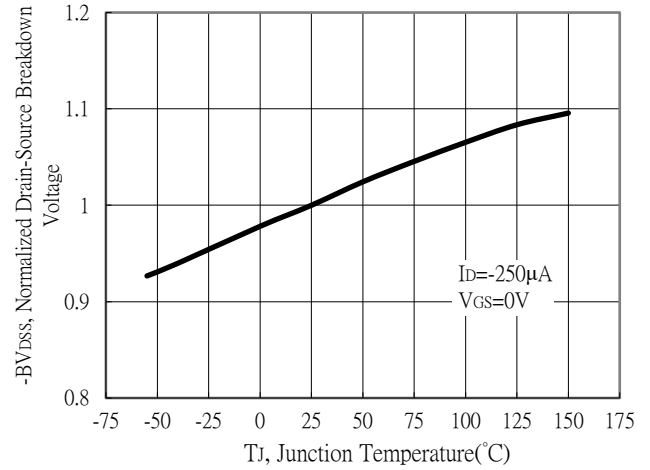


Typical Characteristics

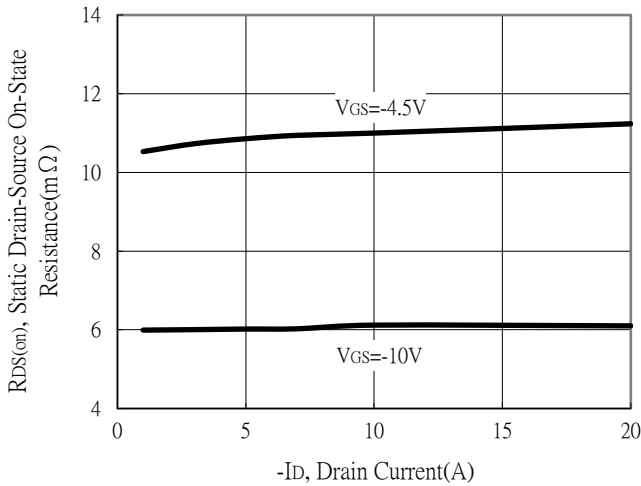
Typical Output Characteristics



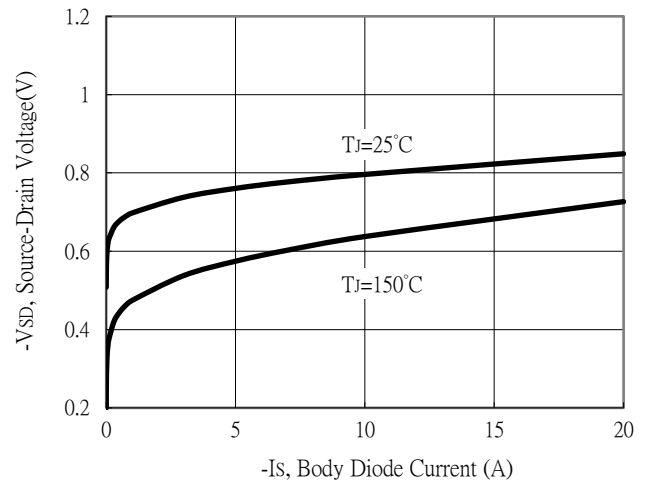
Breakdown Voltage vs Ambient Temperature



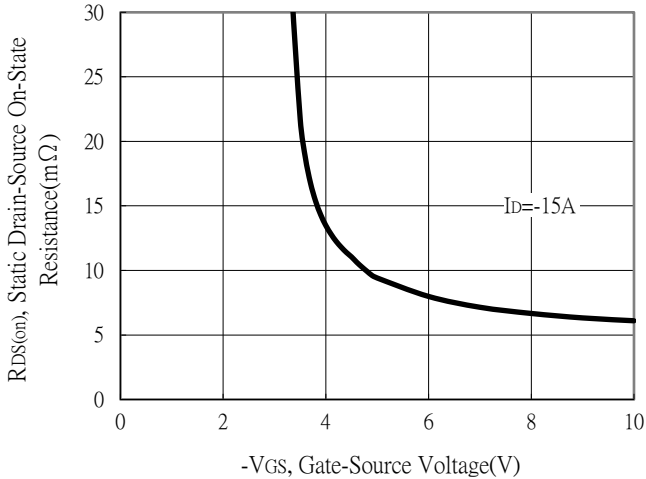
Static Drain-Source On-State resistance vs Drain Current



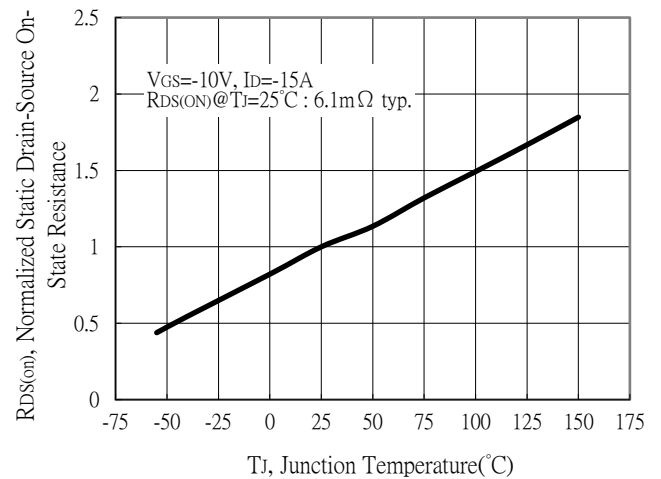
Body Diode Current vs Source-Drain Voltage



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

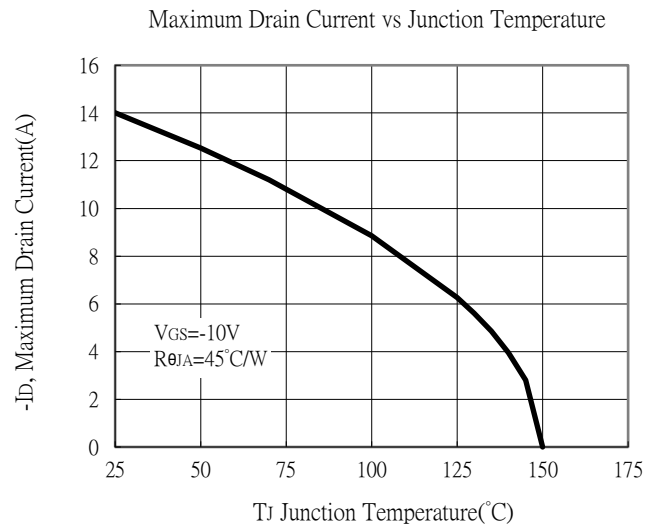
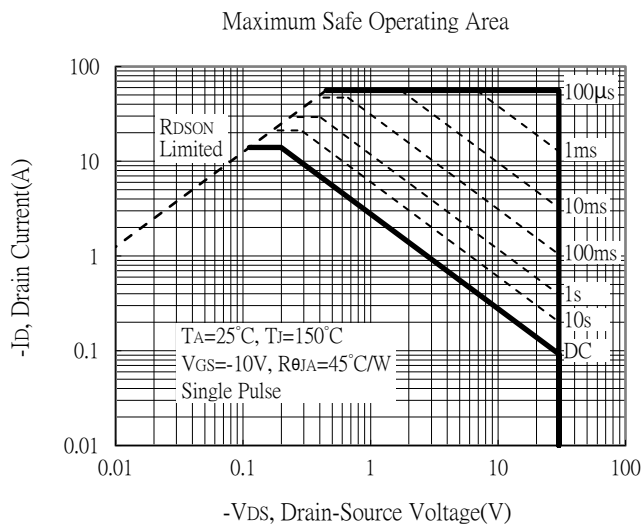
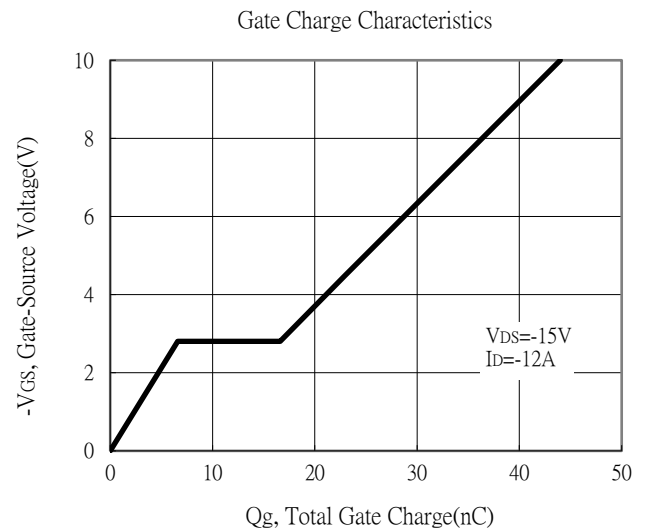
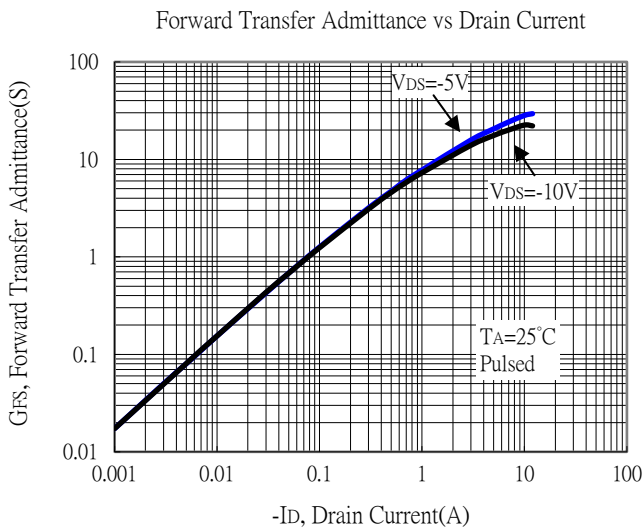
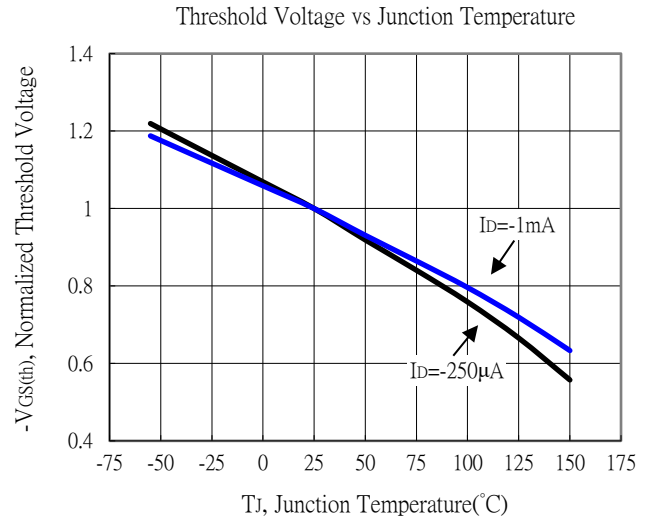
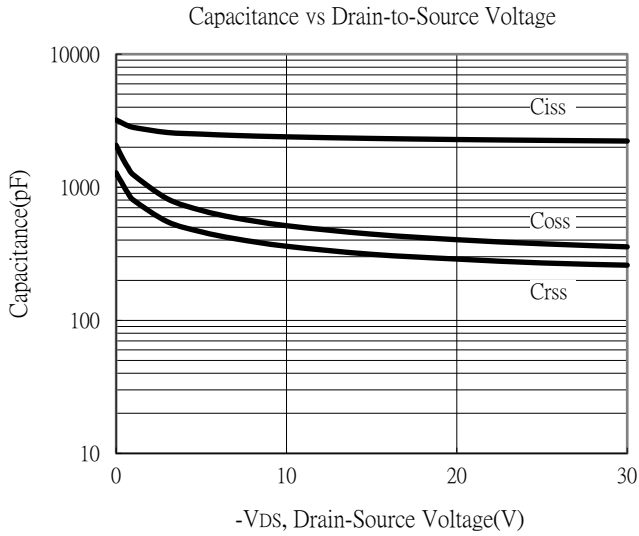


Drain-Source On-State Resistance vs Junction Temperature



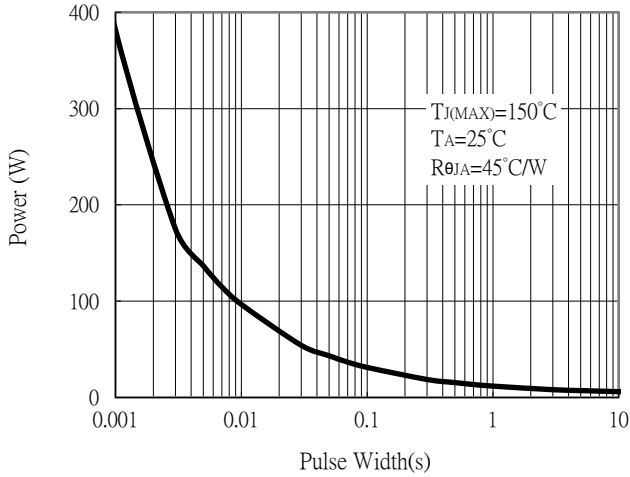


Typical Characteristics

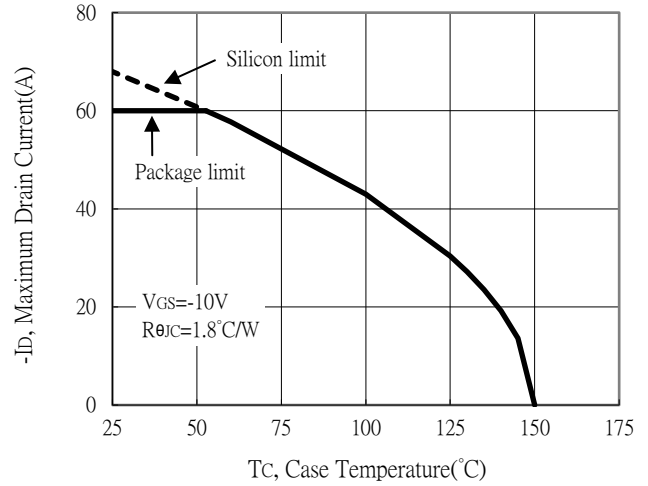


## Typical Characteristics

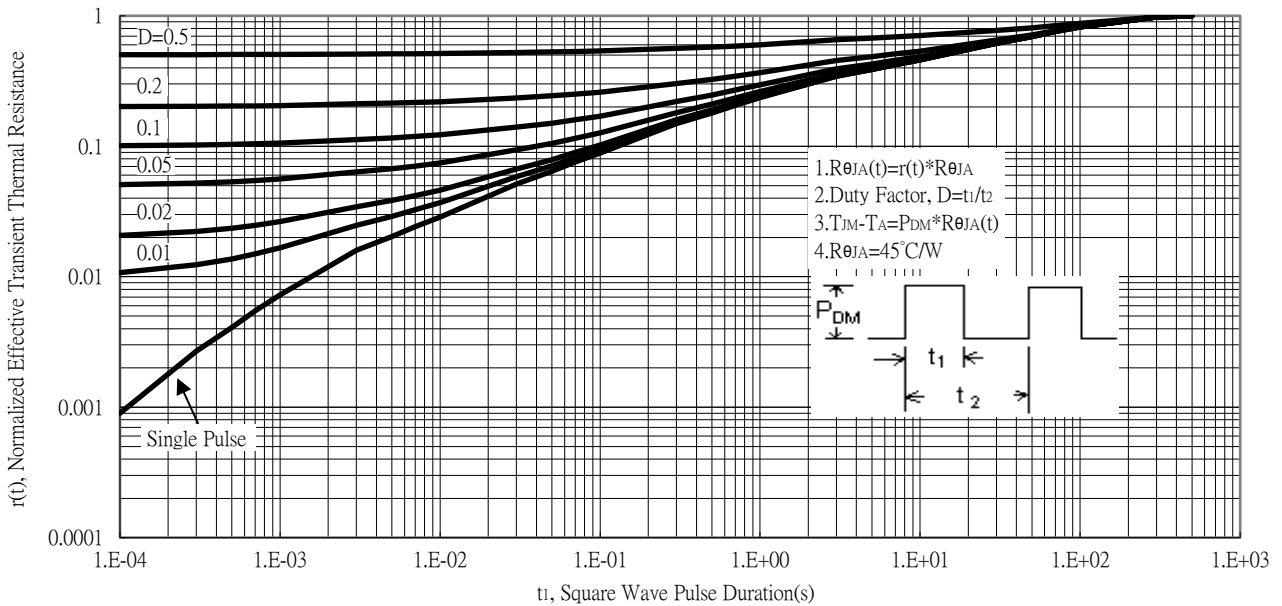
Single Pulse Power Rating, Junction to Ambient



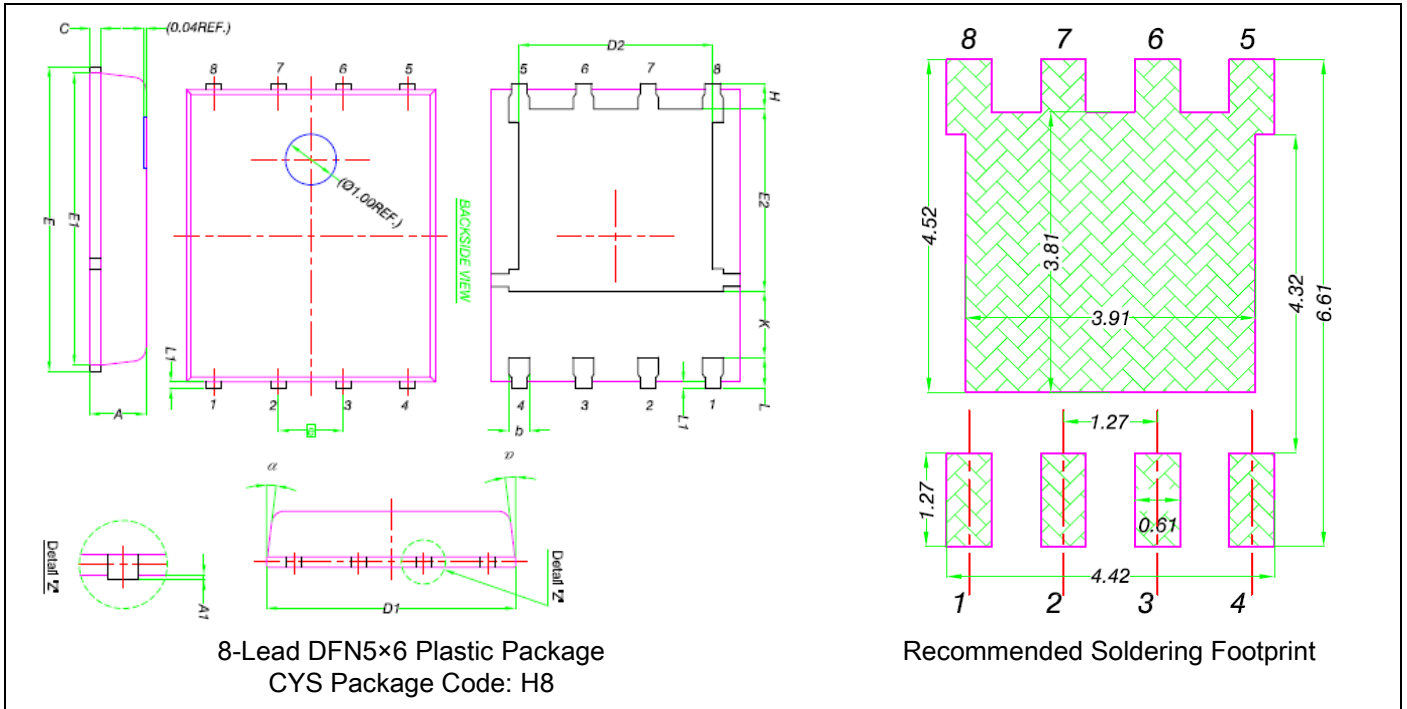
Maximum Drain Current vs Case Temperature



Transient Thermal Response Curves



DFN5×6 Dimension



DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.035	0.043	0.90	1.10	E2	0.133	0.149	3.38	3.78
A1	0.000	0.002	0.00	0.05	e	0.050	BSC	1.27	BSC
b	0.013	0.020	0.33	0.51	H	0.016	0.024	0.41	0.61
C	0.008	0.012	0.20	0.30	K	0.043	-	1.10	-
D1	0.189	0.197	4.80	5.00	L	0.020	0.028	0.51	0.71
D2	0.142	0.156	3.61	3.96	L1	0.002	0.008	0.06	0.20
E	0.232	0.240	5.90	6.10	α	0°	12°	0°	12°
E1	0.224	0.228	5.70	5.80					

**Note:**

- Controlling dimension: millimeters.
- Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
- If there is any question with packing specification or packing method, please contact your local CYStek sales office.

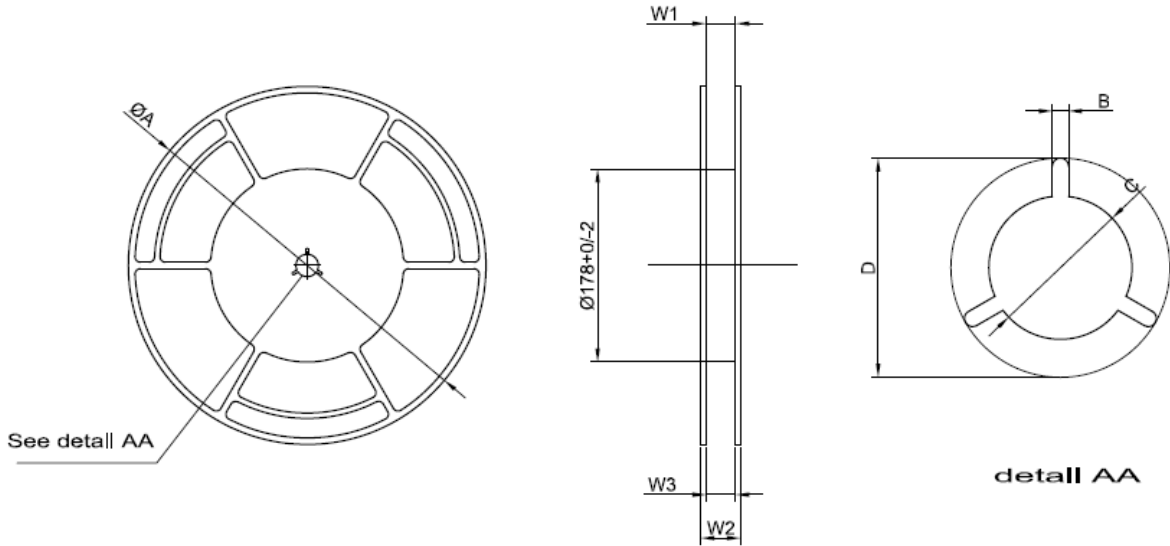
**Material:**

- Lead: pure tin plated.
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0.

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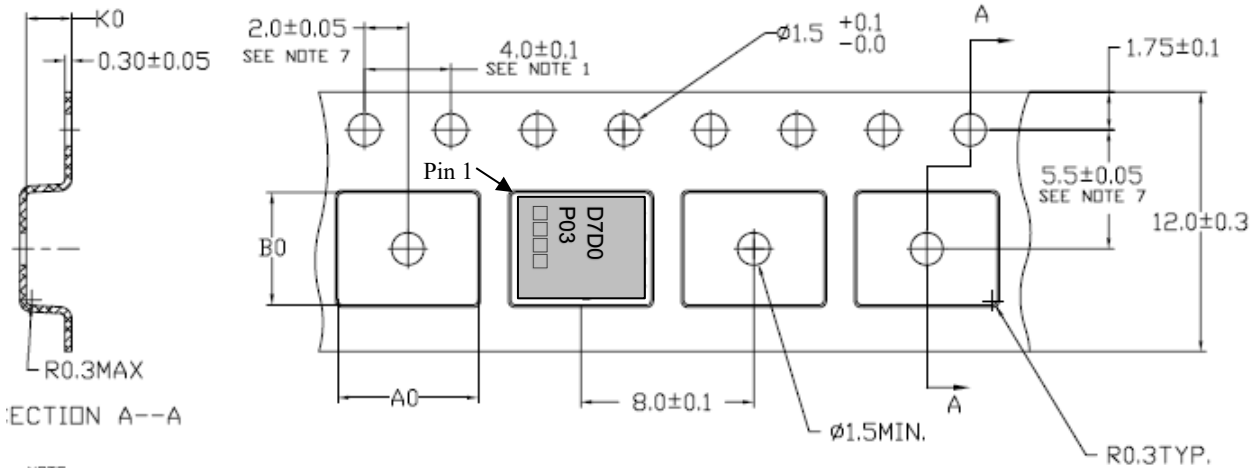
## Reel Dimension



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

Unit:mm

## Carrier Tape Dimension



**NOTE:**

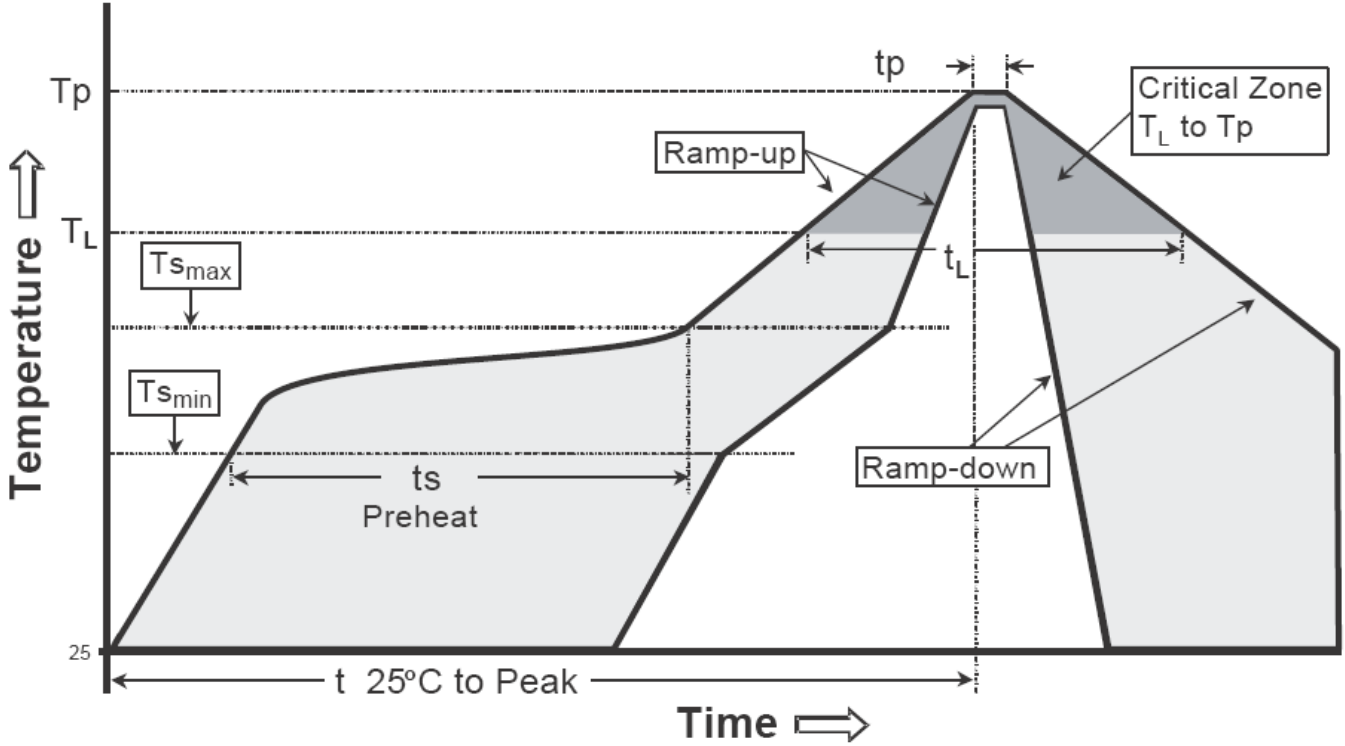
1. 10 SPROCKET HOLE PITCH CUMULATIVE TOLERANCE ±0.2
2. CAMBER NOT TO EXCEED 1mm IN 100mm, NONCUMULATIVE OVER 250mm.
3. MATERIAL: BLACK STATIC DISSIPATIVE PS.(POLYSTYRENE)
4. ALL DIMENSIONS ARE IN MILLIMETERS (UNLESS OTHERWISE SPECIFIED)
5. A0 AND B0 MEASURED ON A PLANE 0.3mm ABOVE THE BOTTOM OF THE POCKET
6. K0 MEASURED FROM A PLANE ON THE INSIDE BOTTOM OF THE POCKET TO THE TOP SURFACE OF THE CARRIER
7. POCKET POSITION RELATIVE TO SPROCKET HOLE MEASURED AS TRUE POSITION OF POCKET, NOT POCKET HOLE
8. SURFACE RESISTIVITY  
1X10E4~1X10E11 OHMS/SQ.

A0=6.5±0.1  
B0=5.3±0.1  
K0=1.4±0.1

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.