P-Channel Enhancement Mode Power MOSFET

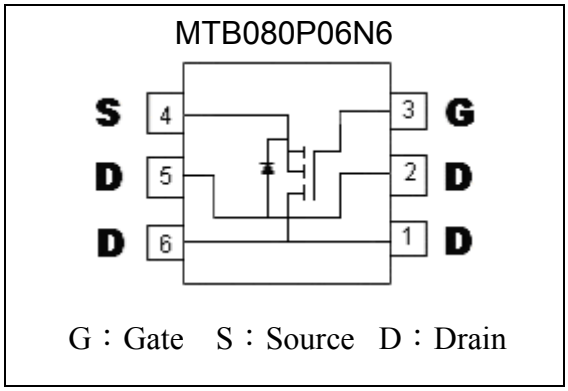
MTB080P06N6

BV_{DSS}		-60V
I_D@V_{GS}=-4.5V, T_C=25°C		-3.8A
I_D@V_{GS}=-4.5V, T_A=25°C		-3.0A
$R_{DSON(TYP)}$	V_{GS}=-10V, I_D=-3A	79mΩ
	V_{GS}=-4.5V, I_D=-2.7A	107mΩ

Features

- Simple drive requirement
- Low on-resistance
- Small package outline
- Pb-free lead plating and halogen-free package

Equivalent Circuit



Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Drain-Source Voltage		V_{DS}	-60	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_C=25 °C, V_{GS}=-10V	I_D	-3.8	A
	T_C=70 °C, V_{GS}=-10V		-3.0	
	T_A=25 °C, V_{GS}=-10V (Note 1)		-3.0	
	T_A=70 °C, V_{GS}=-10V (Note 1)		-2.4	
Pulsed Drain Current (Note 2, 3)		I_{DM}	-40	
Total Power Dissipation	T_C=25 °C	P_D	3.1	W
	T_C=70 °C		2.0	
	T_A=25 °C (Note 1)		2.0	
	T_A=70 °C (Note 1)		1.25	
Operating Junction Temperature and Storage Temperature Range		Tj, Tstg	-55~+150	°C

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	$R_{th,j\text{-}c}$	40	°C/W
Thermal Resistance, Junction-to-ambient, max (Note 1)	$R_{\theta JA}$	62.5	

Note : 1.Surface mounted on 1 in² copper pad of FR-4 board, t≤5 sec. 156℃/W when mounted on minimum copper pad.
2.Pulse width limited by maximum junction temperature.
3.Pulse Width ≤300μs, Duty Cycle≤2%

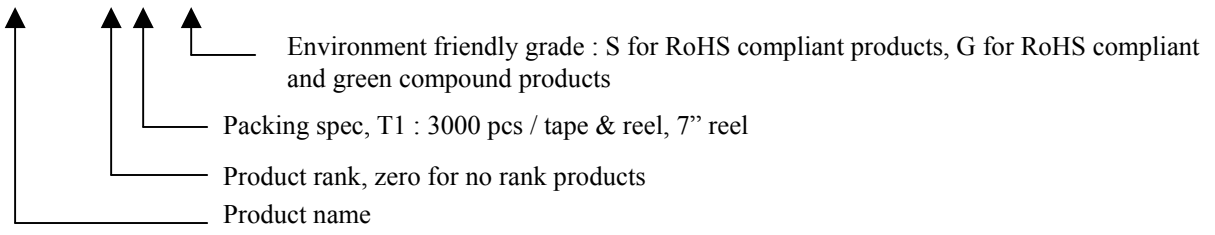
Electrical Characteristics (Ta=25°C, unless otherwise noted)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	-60	-	-	V	V_{GS}=0V, I_D=-250μA
$\Delta BV_{DSS}/\Delta Tj$	-	-56	-	mV/℃	Reference to 25℃, I_D=-250μA
$V_{GS(th)}$	-1	-	-2.5	V	V_{DS}=V_{GS}, I_D=-250μA
I_{GSS}	-	-	±100	nA	V_{GS}=±20V, V_{DS}=0V
I_{DSS}	-	-	-1	μA	V_{DS}=-60V, V_{GS}=0V, Tj=25℃
	-	-	-10		V_{DS}=-48V, V_{GS}=0V, Tj=55℃
*$R_{DS(ON)}$	-	79	104	mΩ	I_D=-3A, V_{GS}=-10V
	-	107	150		I_D=-2.7A, V_{GS}=-4.5V
*G_{FS}	-	6.1	-	S	V_{DS}=-10V, I_D=-3A
Dynamic					
Ciss	-	512	-	pF	V_{DS}=-25V, V_{GS}=0V, f=1MHz
Coss	-	58	-		
Crss	-	40	-		
$t_{d(ON)}$	-	6.4	-	ns	V_{DS}=-30V, I_D=-3A, V_{GS}=-10V, R_G=3Ω
t_r	-	16.6	-		
$t_{d(OFF)}$	-	25.8	-		
t_f	-	7.4	-		
Qg	-	12	-	nC	V_{DS}=-10V, I_D=-3A, V_{GS}=-10V
Qgs	-	1.7	-		
Qgd	-	3.0	-		
Source-Drain Diode					
*I_S	-	-	-3	A	
*I_{SM}	-	-	-15		
*V_{SD}	-	-0.82	-1.2	V	I_S=-2A,V_{GS}=0V
*T_{rr}	-	11.1	-	ns	I_F=-3A,V_{GS}=0V, dI_F/dt=100A/μs
Q_{rr}	-	7.3	-	nC	

*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

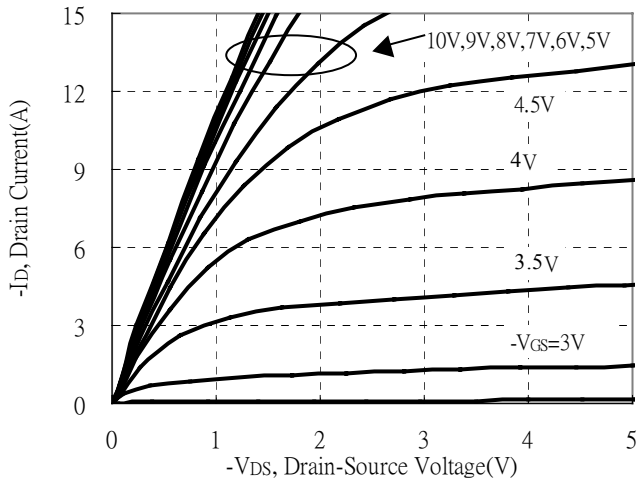
Ordering Information

Device	Package	Shipping
MTB080P06N6-0-T1-G	SOT-26 (Pb-free lead plating and halogen-free package)	3000 pcs / Tape & Reel

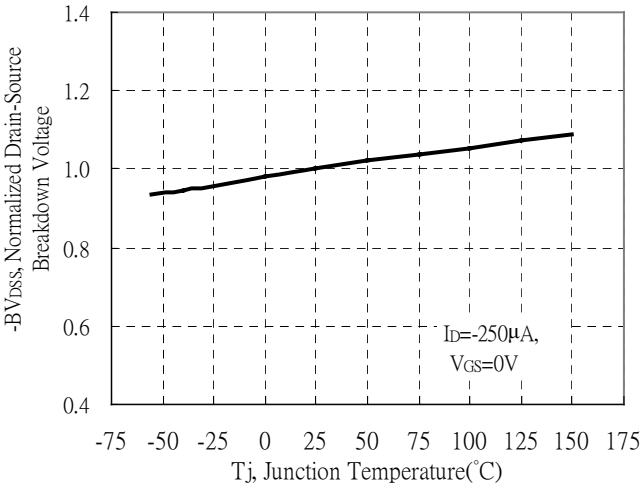


Typical Characteristics

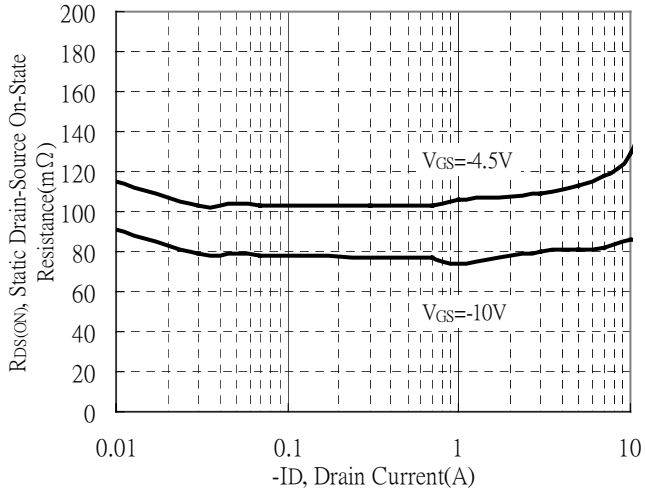
Typical Output Characteristics



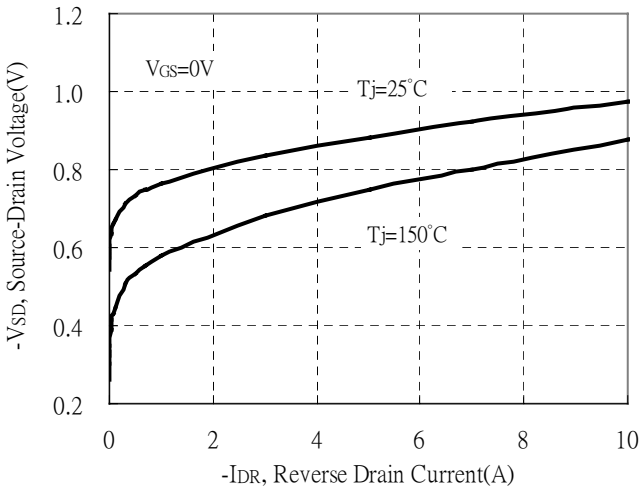
Brekdown Voltage vs Ambient Temperature



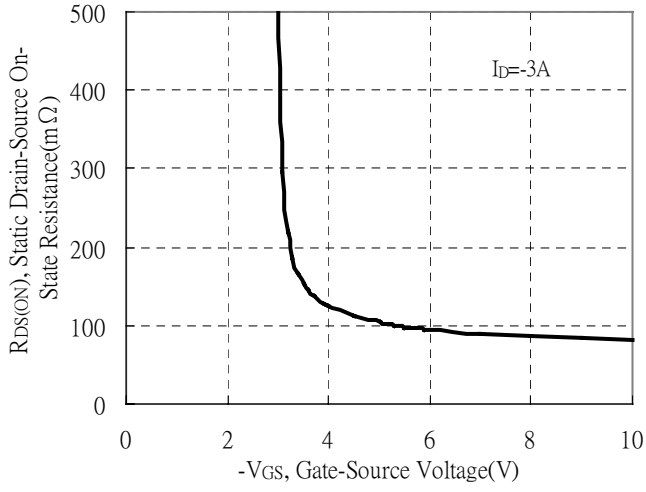
Static Drain-Source On-State resistance vs Drain Current



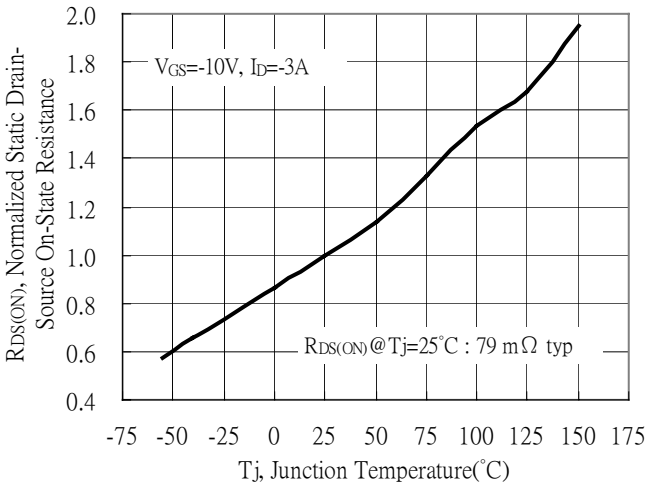
Reverse Drain Current vs Source-Drain Voltage



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

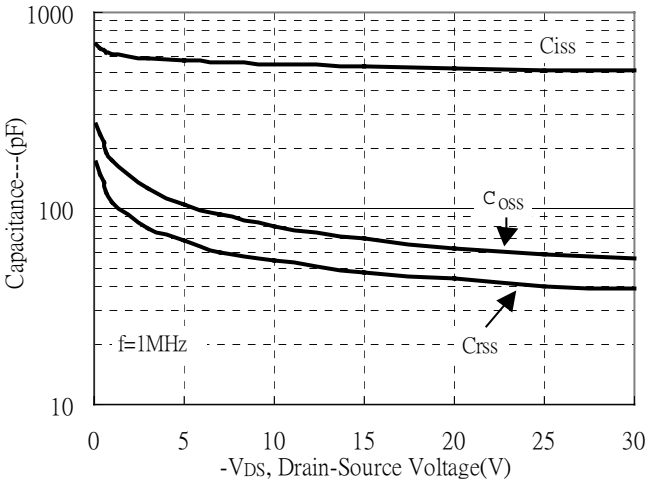


Drain-Source On-State Resistance vs Junction Tempearture

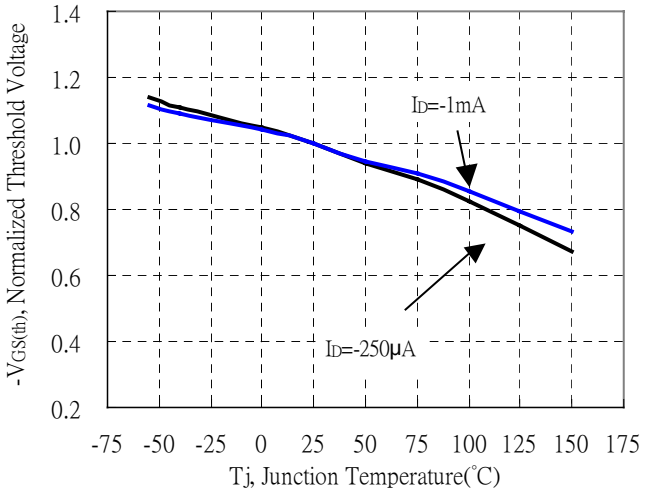


Typical Characteristics(Cont.)

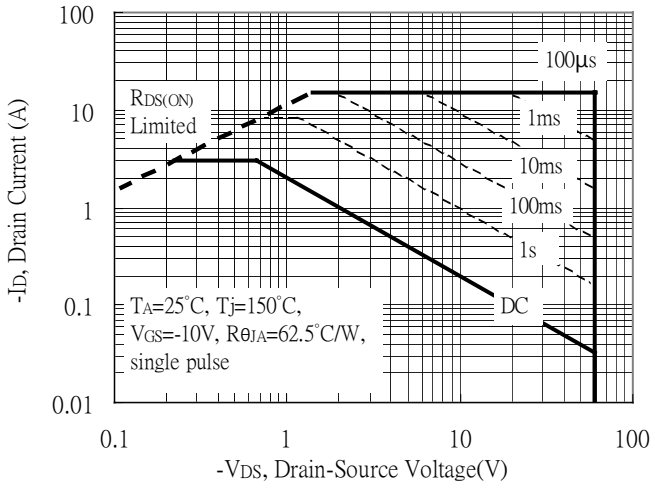
Capacitance vs Drain-to-Source Voltage



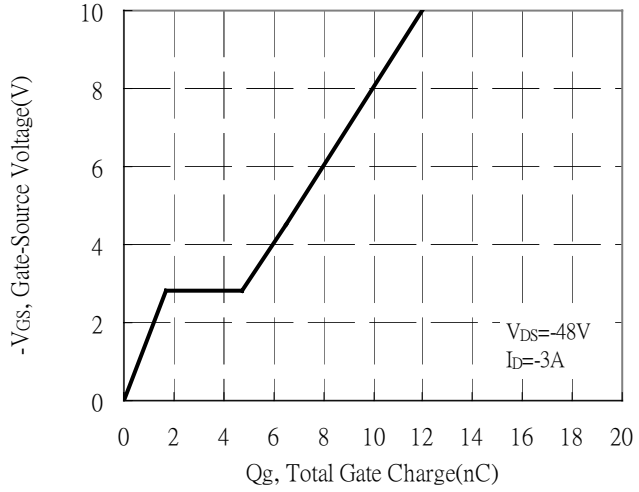
Threshold Voltage vs Junction Tempearture



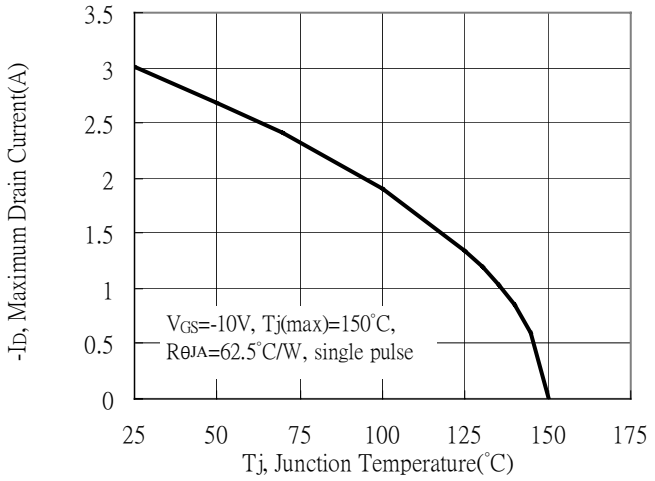
Maximum Safe Operating Area



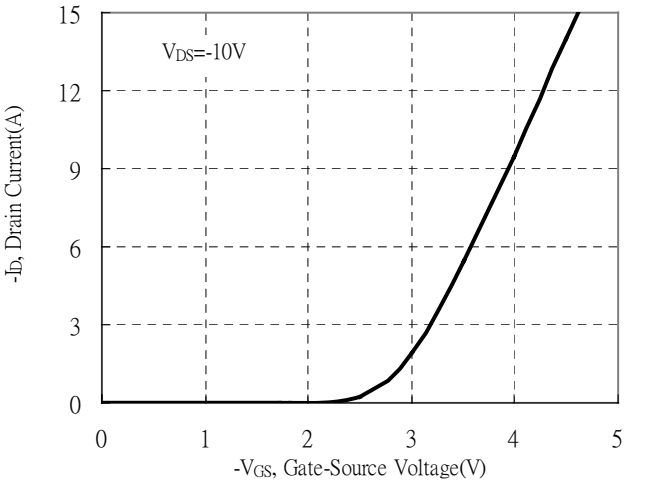
Gate Charge Characteristics



Maximum Drain Current vs Junction Temperature

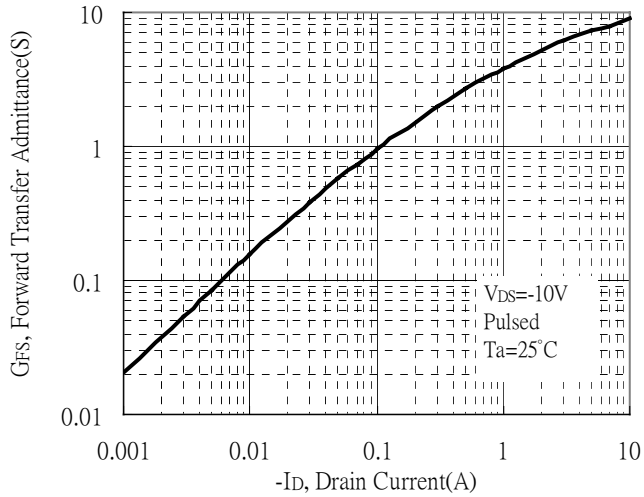


Typical Transfer Characteristics

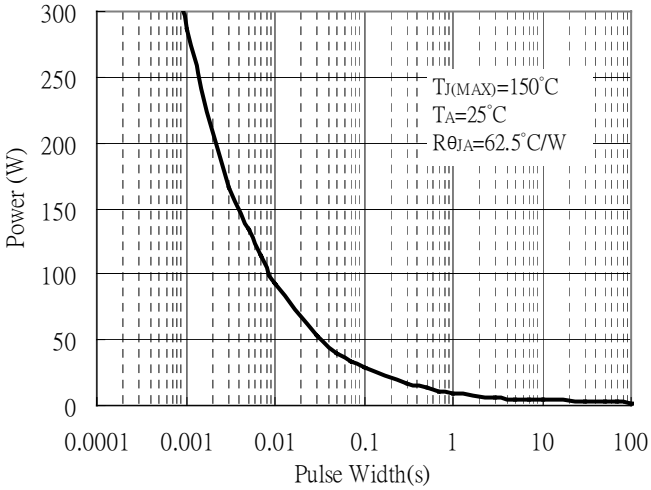


Typical Characteristics(Cont.)

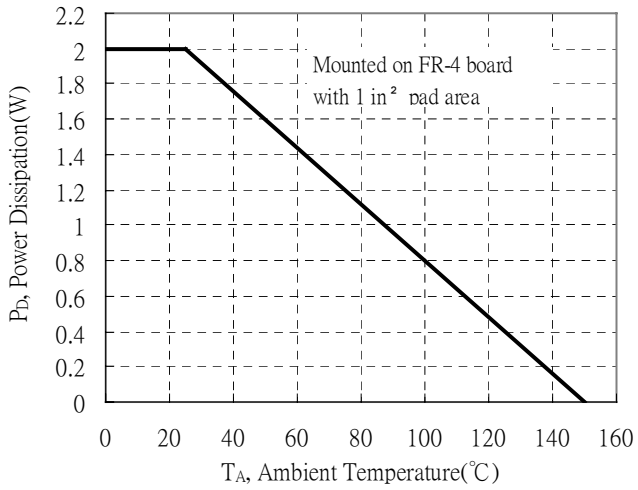
Forward Transfer Admittance vs Drain Current



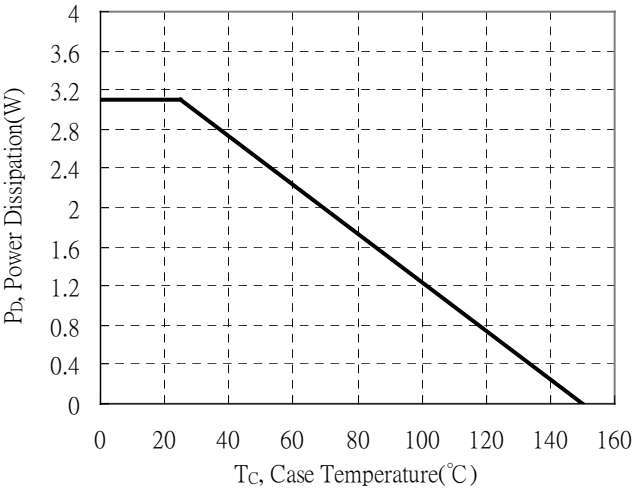
Single Pulse Power Rating, Junction to Case



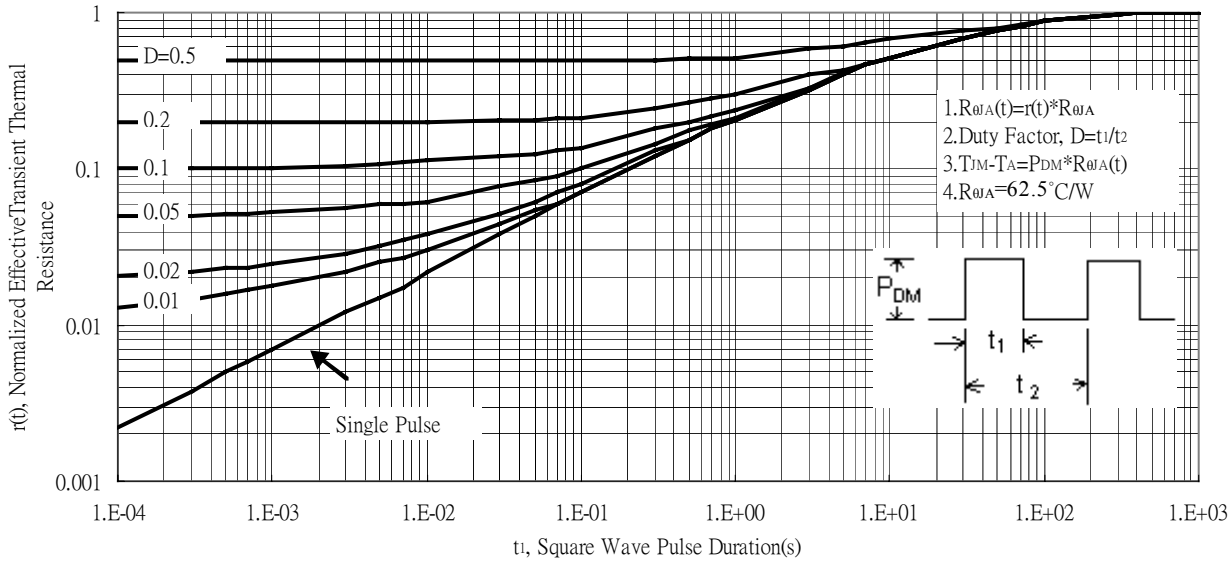
Power Derating Curve



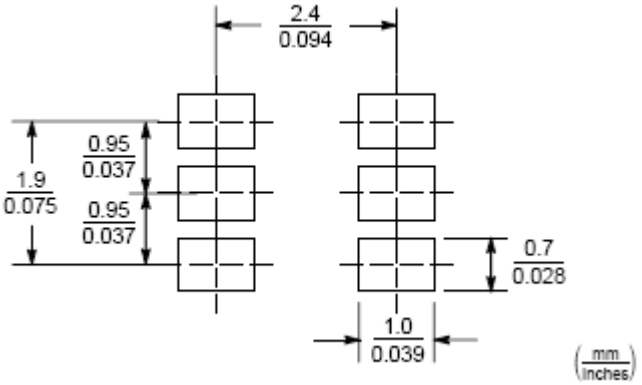
Power Derating Curve



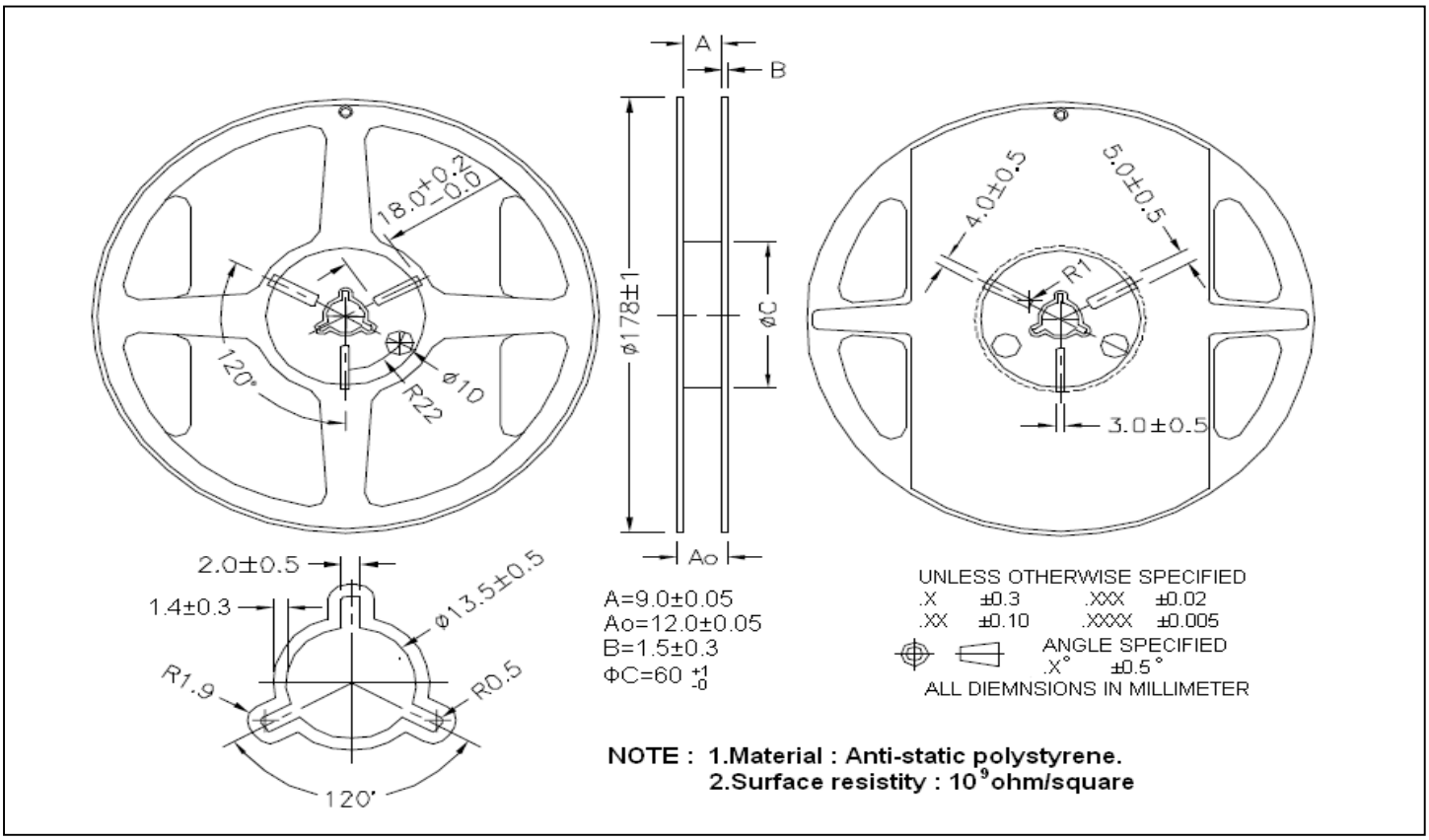
Transient Thermal Response Curves



Recommended Soldering Footprint

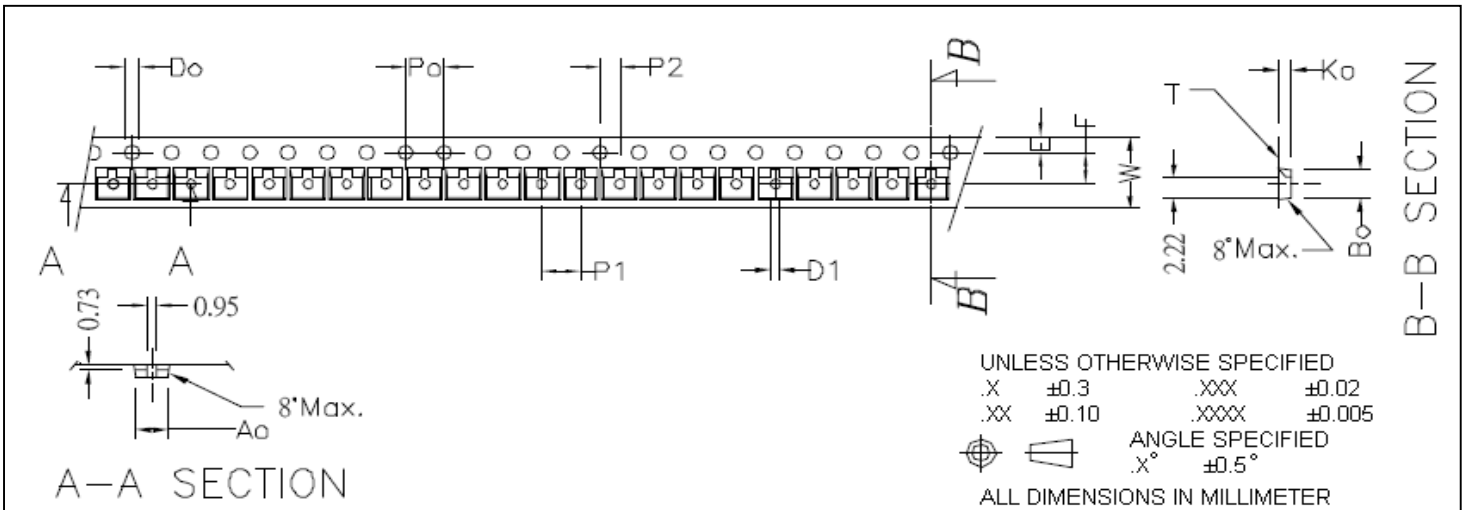


Reel Dimension



NOTE : 1.Material : Anti-static polystyrene.
2.Surface resistity : 10^9 ohm/square

Carrier Tape Dimension

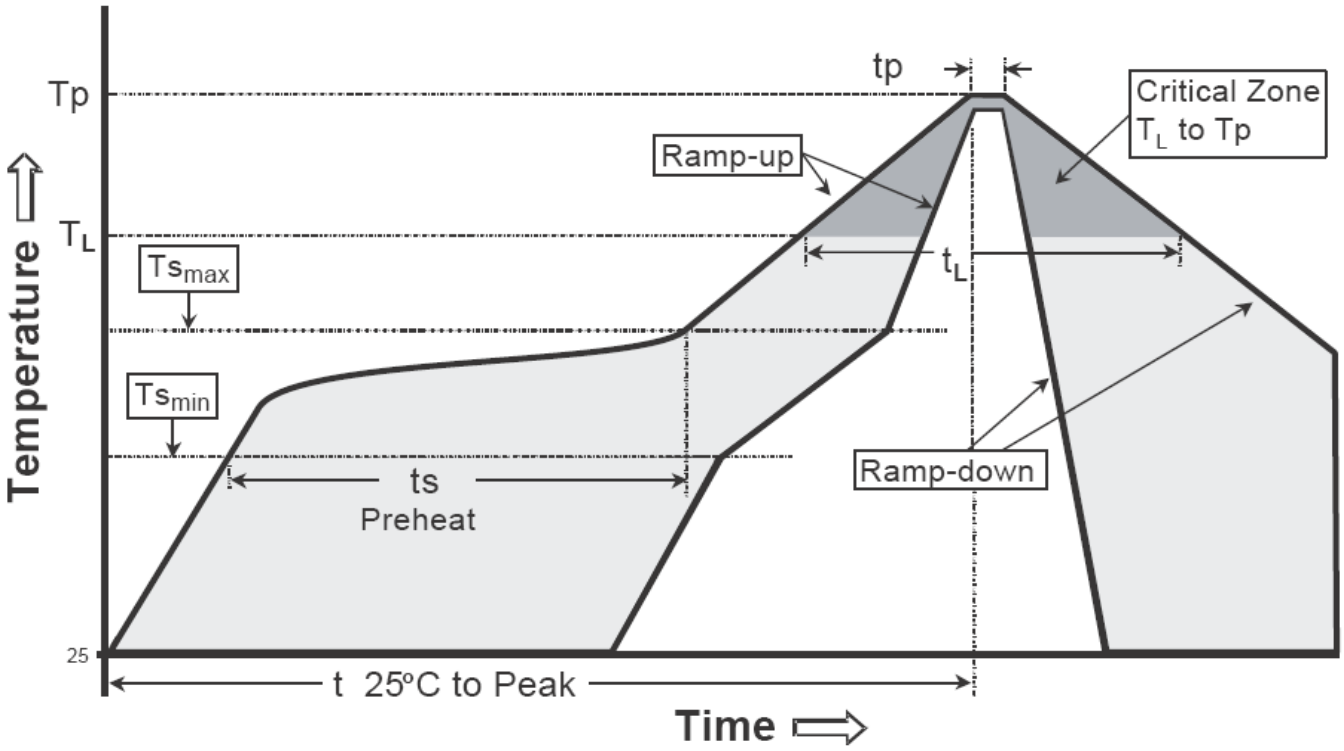


symbol	Ao	Bo	Ko	Po	P1	P2	T
Spec	3.20±0.1	3.00±0.1	1.33±0.1	4.0±0.1	4.0±0.10	2.0±0.05	0.20±0.02
symbol	E	F	Do	D1	W	10Po	
Spec	1.75±0.1	3.5±0.05	1.50±0.10	1.0±0.25	$8.0^{+0.3}_{-0.1}$	40.0±0.2	

Recommended wave soldering condition

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

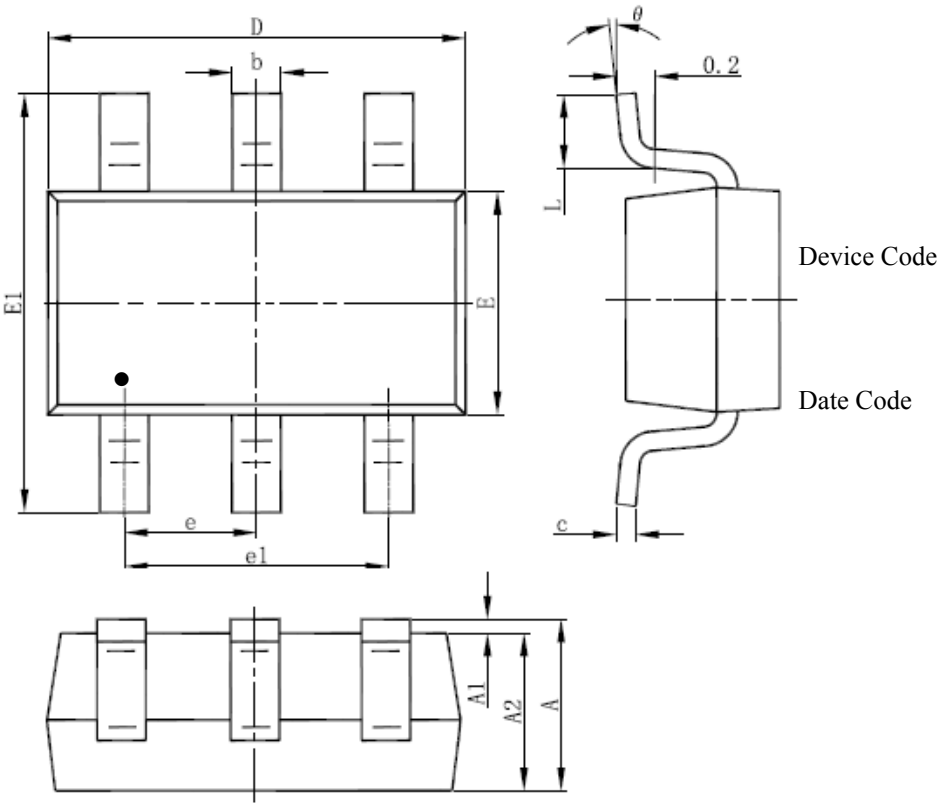
Recommended temperature profile for IR reflow

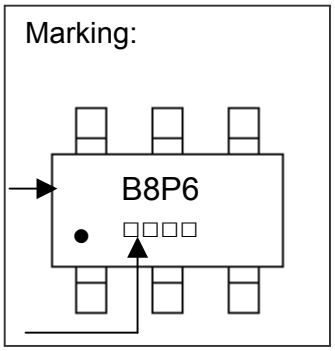


Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(T_S min) −Temperature Max(T_S max) −Time($t_{s\ min}$ to $t_{s\ max}$)	 100°C 150°C 60-120 seconds	 150°C 200°C 60-180 seconds
Time maintained above: −Temperature (T_L) − Time (t_L)	 183°C 60-150 seconds	 217°C 60-150 seconds
Peak Temperature(T_P)	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.

SOT-26 Dimension





6-Lead SOT-26 Plastic
Surface Mounted Package
CYStek Package Code: N6

Style:
Pin 1. Drain (D)
Pin 2. Drain (D)
Pin 3. Gate (G)
Pin 4. Source (S)
Pin 5. Drain (D)
Pin 6. Drain (D)

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049	E	1.500	1.700	0.059	0.067
A1	0.000	0.100	0.000	0.004	E1	2.650	2.950	0.104	0.116
A2	1.050	1.150	0.041	0.045	e	0.950 (BSC)		0.037 (BSC)	
b	0.300	0.500	0.012	0.020	e1	1.800	2.000	0.071	0.079
c	0.100	0.200	0.004	0.008	L	0.300	0.600	0.012	0.024
D	2.820	3.020	0.111	0.119	θ	0°	8°	0°	8°

Notes : 1.Controlling dimension : millimeters.
2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
3.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.