

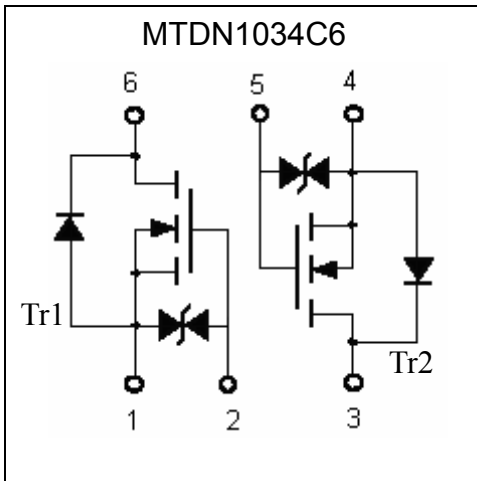
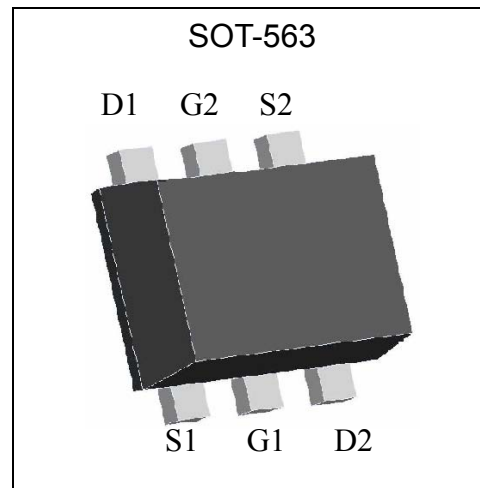
N-CHANNEL MOSFET (dual transistors)

MTDN1034C6

Features

- High speed switching
- Low-voltage drive(1.5V)
- Easily designed drive circuits
- Easy to use in parallel
- Pb-free package

BV_{DSS}		30V
I_D		0.3A
$R_{DS(on)(TYP)}$	$V_{GS}=4.5V, I_D=200mA$	0.85 Ω
	$V_{GS}=2.5V, I_D=175mA$	1.23 Ω
	$V_{GS}=1.8V, I_D=150mA$	1.8 Ω
	$V_{GS}=1.5V, I_D=40mA$	2.3 Ω

Equivalent Circuit

Outline


The following characteristics apply to both Tr1 and Tr2

Absolute Maximum Ratings ($T_a=25^{\circ}C$, unless otherwise specified)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V_{DSS}	30	V
Gate-Source Voltage	V_{GSS}	± 8	V
Continuous Drain Current @ $V_{GS}=4.5V, T_A=25^{\circ}C$	I_D	0.3	A
Continuous Drain Current @ $V_{GS}=4.5V, T_A=85^{\circ}C$		0.22	
Pulsed Drain Current	I_{DM}	1.6 (Note 1)	
Power Dissipation	P_d	150 (Note 2)	mW
Operating Junction Temperature Range	T_j	-55~+150	$^{\circ}C$
Storage Temperature Range	T_{stg}	-55~+150	$^{\circ}C$

- Note : 1. Pulse test, pulse width $\leq 300\mu s$, duty $\leq 2\%$
 2. 120mW per element must not be exceeded.



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

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS} *	30	-	-	V	V _{GS} =0, I _D =10μA
V _{GS(th)}	0.5	0.78	1.1	V	V _{DS} =V _{GS} , I _D =250μA
I _{GSS}	-	-	±1	μA	V _{GS} =±8V, V _{DS} =0
I _{DSS}	-	-	100	nA	V _{DS} =30V, V _{GS} =0
R _{DS(ON)} *	-	0.85	1.5	Ω	V _{GS} =4.5V, I _D =200mA
	-	1.23	3		V _{GS} =2.5V, I _D =175mA
	-	1.8	4		V _{GS} =1.8V, I _D =150mA
	-	2.3	5		V _{GS} =1.5V, I _D =40mA
G _{FS}	-	460	-	mS	V _{DS} =10V, I _D =200mA
Dynamic					
C _{iss}	-	33.5	-	pF	V _{DS} =15V, V _{GS} =0, f=1MHz
C _{oss}	-	6.1	-		
C _{rss}	-	2.5	-		
Q _g	-	495	-	pC	V _{DS} =15V, I _D =300mA, V _{GS} =4.5V
Q _{gs}	-	49	-		
Q _{gd}	-	175	-		
t _{d(on)}	-	-	50	ns	V _{DD} =15V, I _D =200mA, V _{GS} =4.5V, R _G =10Ω
t _r	-	-	25		
t _{d(off)}	-	-	50		
t _f	-	-	25		
Source-Drain Diode					
I _S	-	-	0.3	A	
I _{SM}	-	-	2		
V _{SD}	-	0.81	1	V	I _S =150mA, V _{GS} =0V

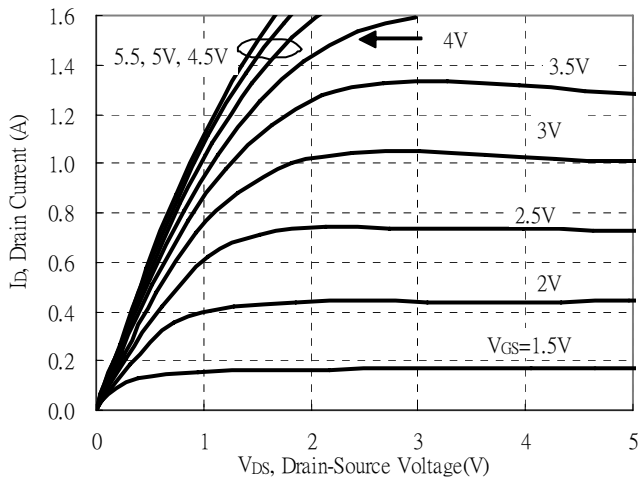
*Pulse Test : Pulse Width ≤300μs, Duty Cycle ≤2%

Ordering Information

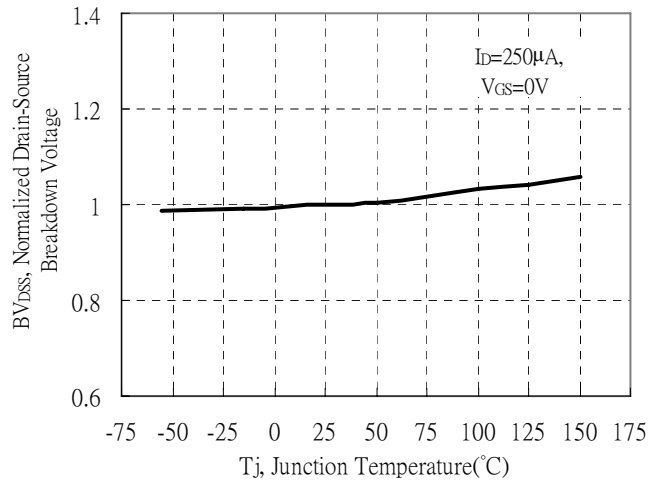
Device	Package	Shipping	Marking
MTDN1034C6	SOT-563 (Pb-free and halogen-free package)	3000 pcs / Tape & Reel	KL

Typical Characteristics

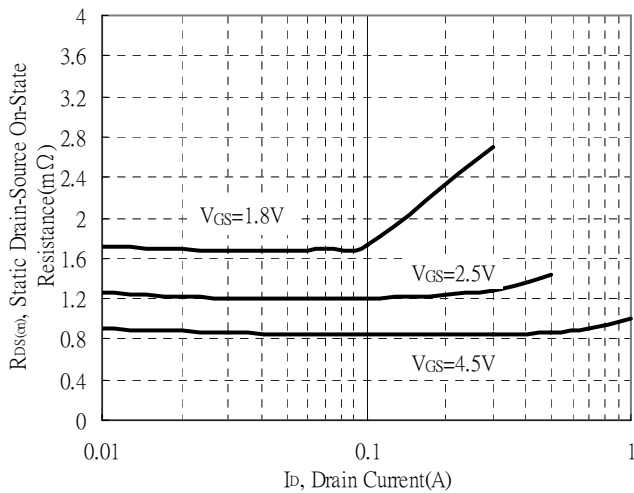
Typical Output Characteristics



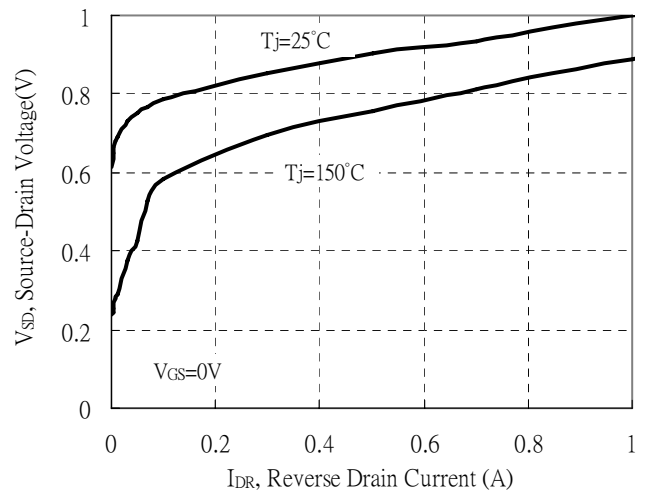
Breakdown Voltage vs Ambient Temperature



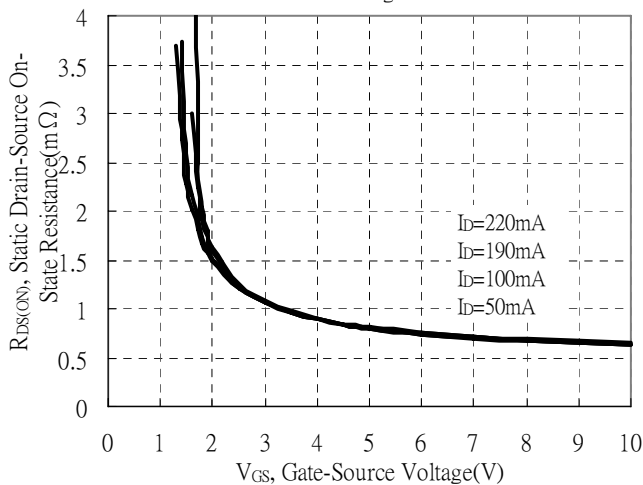
Static Drain-Source On-State resistance vs Drain Current



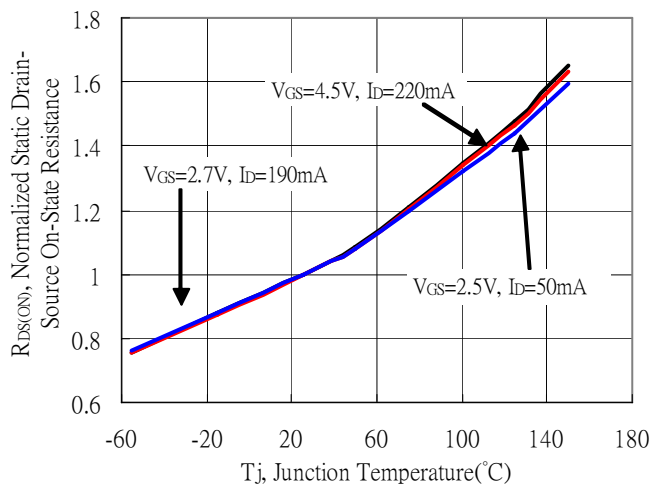
Reverse Drain Current vs Source-Drain Voltage



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

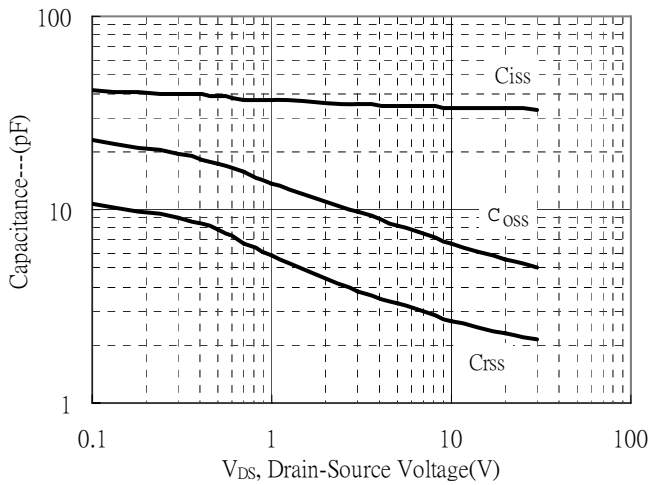


Drain-Source On-State Resistance vs Junction Temperature

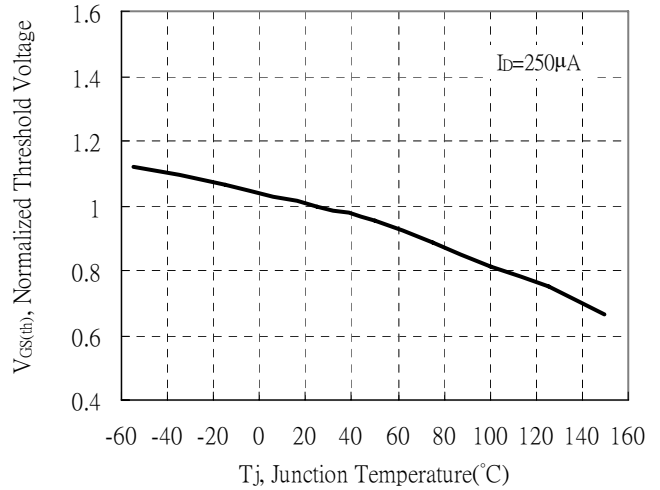


Typical Characteristics(Cont.)

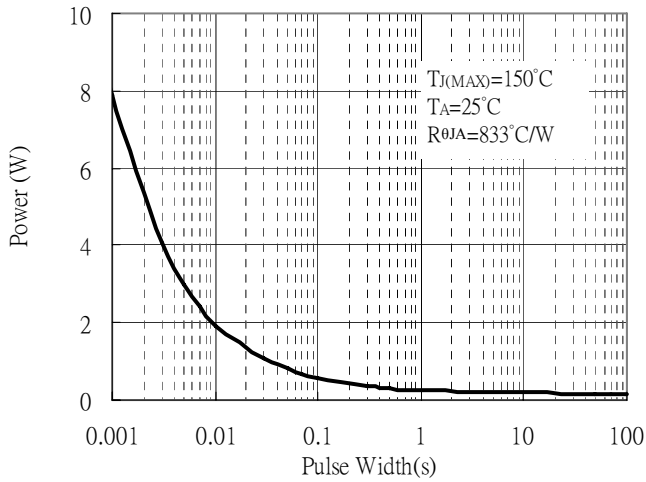
Capacitance vs Drain-to-Source Voltage



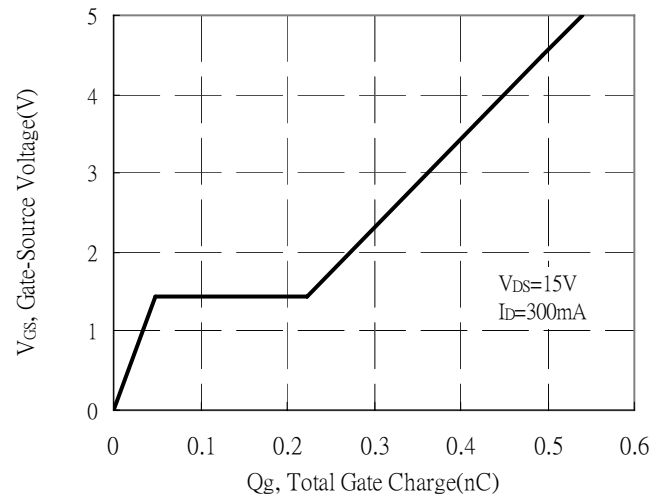
Threshold Voltage vs Junction Temperature



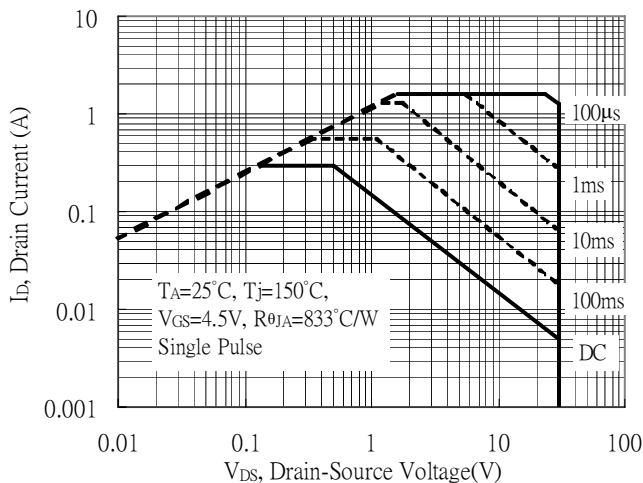
Single Pulse Power Rating, Junction to Ambient
 (Note on page 2)



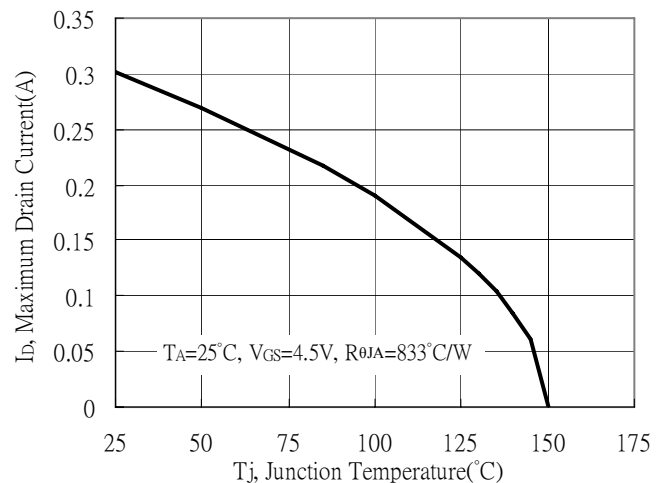
Gate Charge Characteristics



Maximum Safe Operating Area

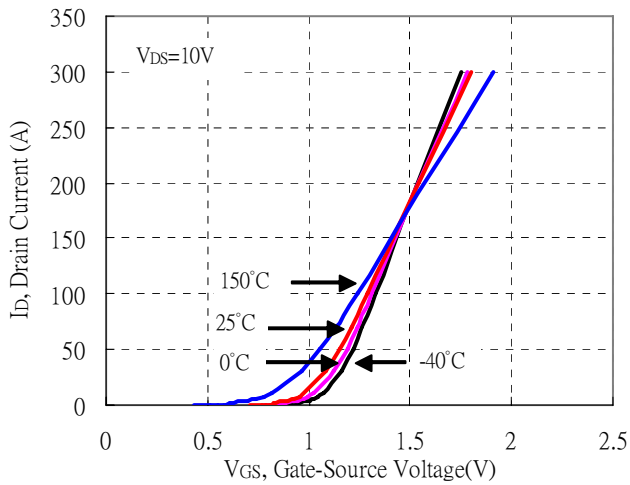


Maximum Drain Current vs Junction Temperature

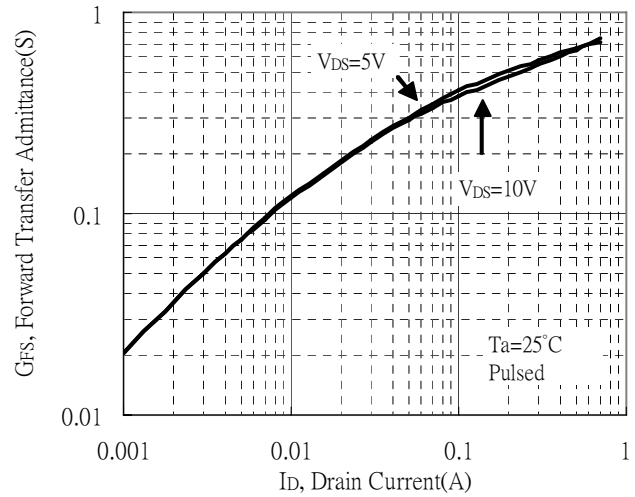


Typical Characteristics(Cont.)

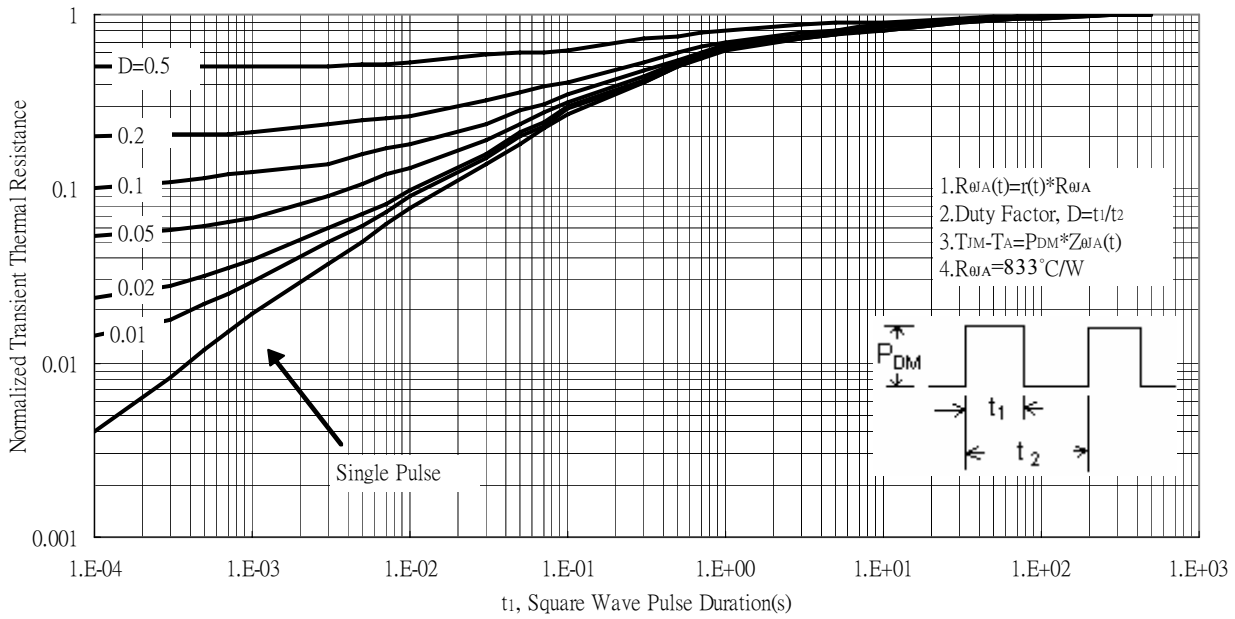
Typical Transfer Characteristics



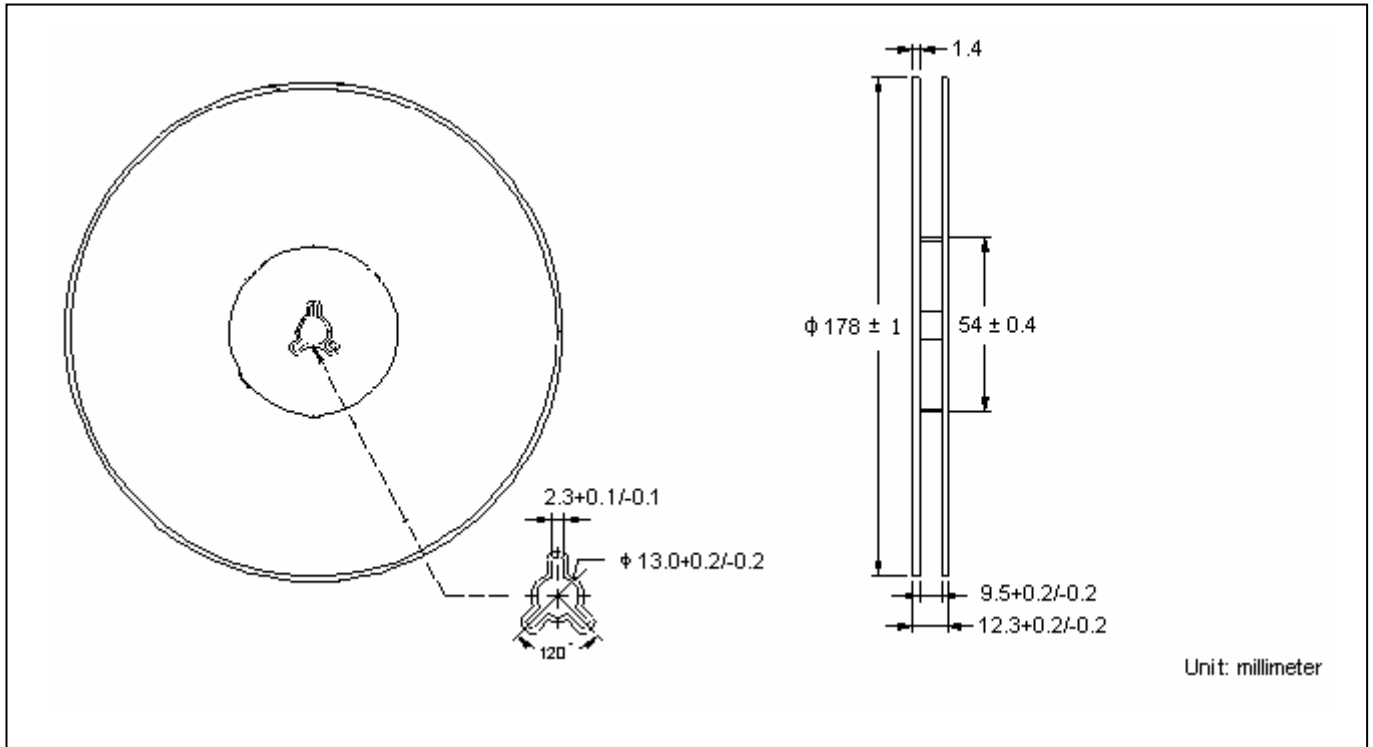
Forward Transfer Admittance vs Drain Current



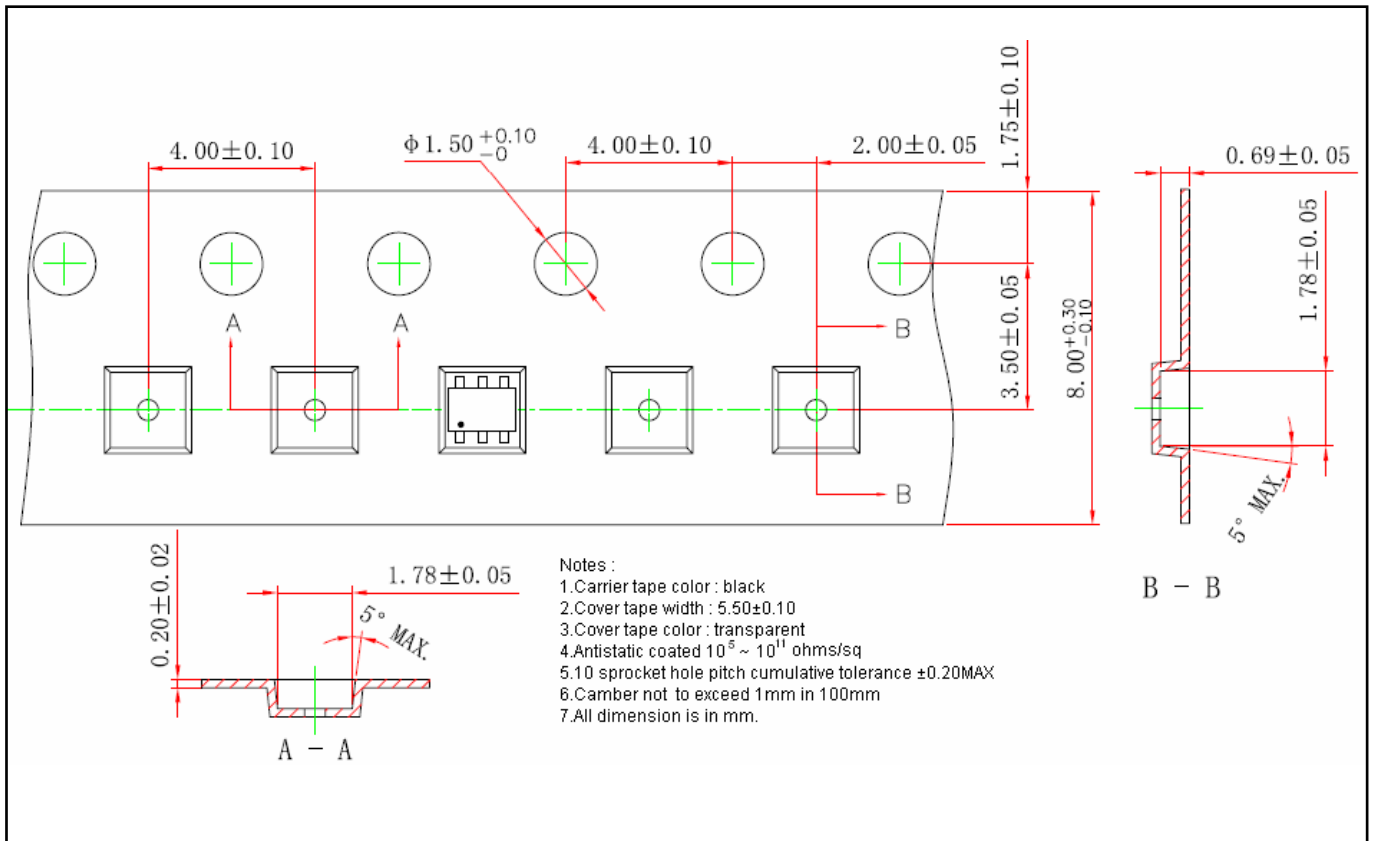
Transient Thermal Response Curves



Reel Dimension



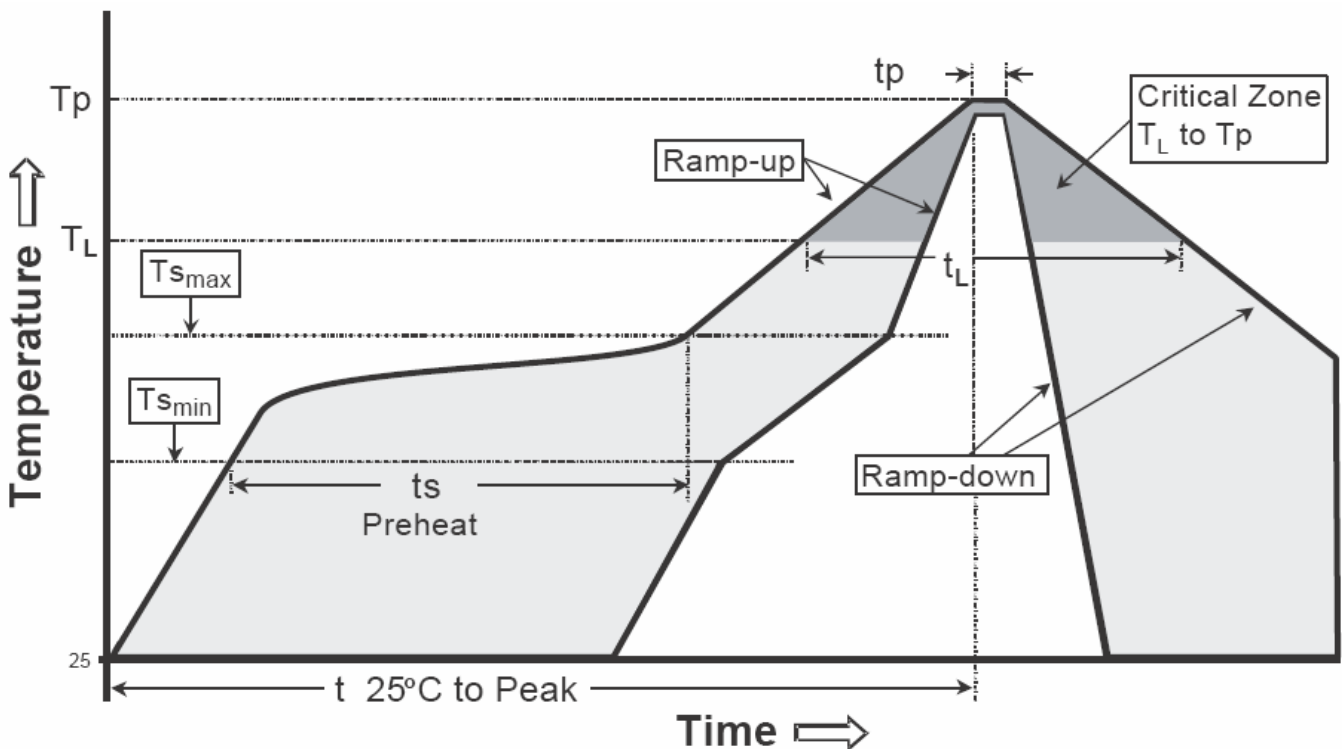
Carrier Tape Dimension



Recommended wave soldering condition

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

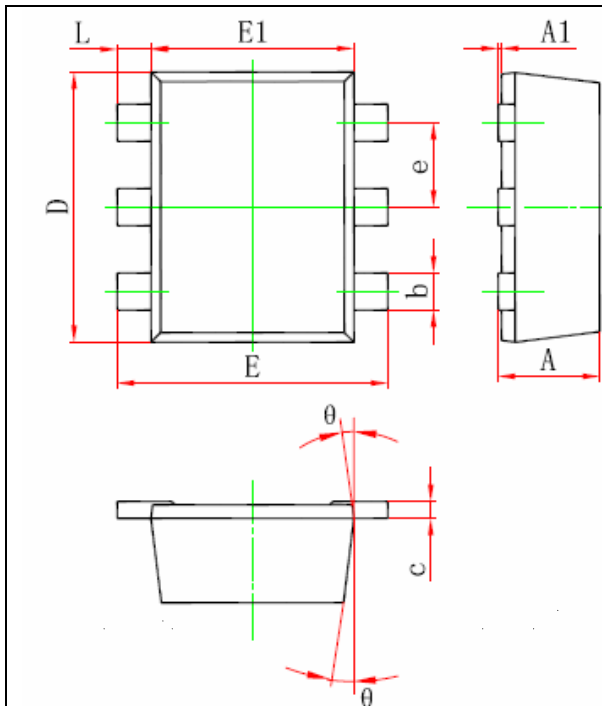
Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (T _{smax} to T _p)	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(T _{s min})	100°C	150°C
-Temperature Max(T _{s max})	150°C	200°C
-Time(t _{s min} to t _{s max})	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (T _L)	183°C	217°C
- Time (t _L)	60-150 seconds	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.

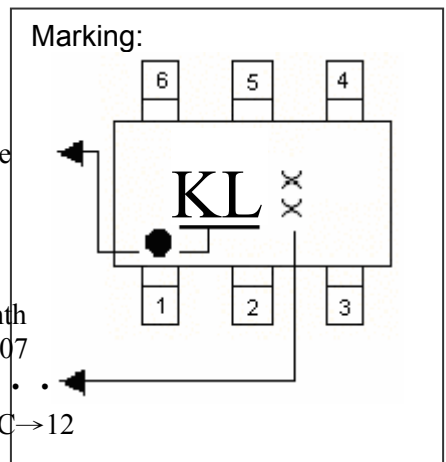
Note : All temperatures refer to topside of the package, measured on the package body surface.

SOT-563 Dimension



The diagram shows three views of the SOT-563 package: a top view with dimensions L, E1, E, D, e, b, and θ ; a side view with dimensions A1, A, and c; and a perspective view showing the lead angle θ and height c.

Marking:



The marking diagram shows a top-down view of the package with pins numbered 1 to 6. The marking includes 'KL' in the center, 'XX' on the right, and a 'Product Code' on the left. Arrows indicate the orientation of the package.

Date Code: Year+Month
 Year: 6→2006, 7→2007
 Month: 1→1, 2→2, . . .
 9→9, A→10, B→11, C→12

Style:
 Pin 1. Source1 (S1)
 Pin 2. Gate1 (G1)
 Pin 3. Drain2 (D2)
 Pin 4. Source2 (S2)
 Pin 5. Gate2 (G2)
 Pin 6. Drain1 (D1)

**6-Lead SOT-563 Plastic Surface Mounted Package
 CYStek Package Code: C6**

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.021	0.024	0.525	0.600	b	0.007	0.011	0.170	0.270
A1	0.000	0.002	0.000	0.050	E1	0.043	0.051	1.100	1.300
e	0.018	0.022	0.450	0.550	E	0.059	0.067	1.500	1.700
c	0.004	0.006	0.090	0.160	L	0.004	0.012	0.100	0.300
D	0.059	0.067	1.500	1.700	θ	7° REF		7° REF	

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.

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