ESD protected Dual N-channel MOSFET

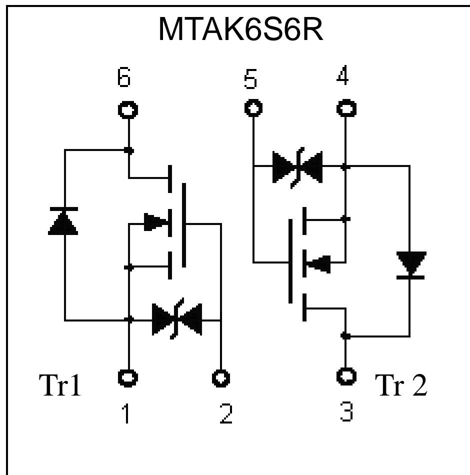
MTAK6S6R

BV_{DSS}		60V
I_D@V_{GS}=4.5V, T_A=25°C		250mA
$R_{DSON(TYP)}$	V_{GS}=4.5V, I_D=200mA	1.3Ω
	V_{GS}=2.5V, I_D=100mA	1.7Ω

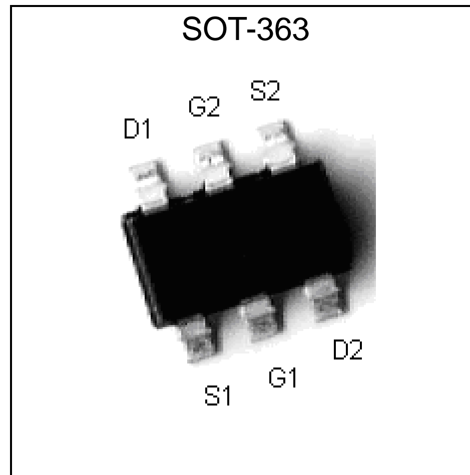
Description

- Low voltage drive(2.5V drive) makes this device ideal for portable equipment.
- The MOSFET elements are independent, eliminating mutual interference.
- Mounting cost and area can be cut in half.
- High speed switching
- ESD protected device, HBM≧2kV
- Pb-free lead plating & halogen-free package

Symbol

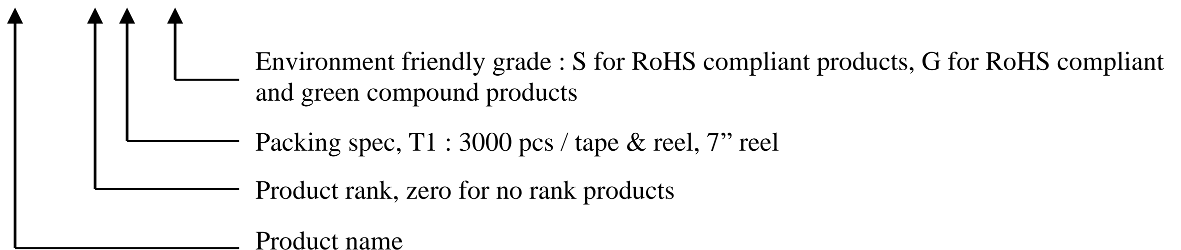


Outline



Ordering Information

Device	Package	Shipping
MTAK6S6R-0-T1-G	SOT-363 (Pb-free lead plating & halogen-free package)	3000 pcs / Tape & Reel



The following characteristics apply to both Tr1 and Tr2

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	BV_{DSS}	60	V
Gate-Source Voltage	V_{GS}	±16	V
Continuous Drain Current	I_D	250	mA
Pulsed Drain Current	I_{DM}	800 *1	mA
Total Power Dissipation	P_D	200 *2	mW
ESD susceptibility	V_{ESD}	2000 *3	V
Operating Junction and Storage Temperature Range	Tj ; Tstg	-55~+150	°C

Note : *1. Pulse Width ≤ 10μs, Duty cycle ≤1%
*2. With each pin mounted on the recommended lands.
*3. Human body model, 1.5kΩ in series with 100pF

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Channel-to-ambient, max	$*R_{th,ch-a}$	625 (total) 800 (per element)	°C/W

Note : With each pin mounted on the recommended lands.

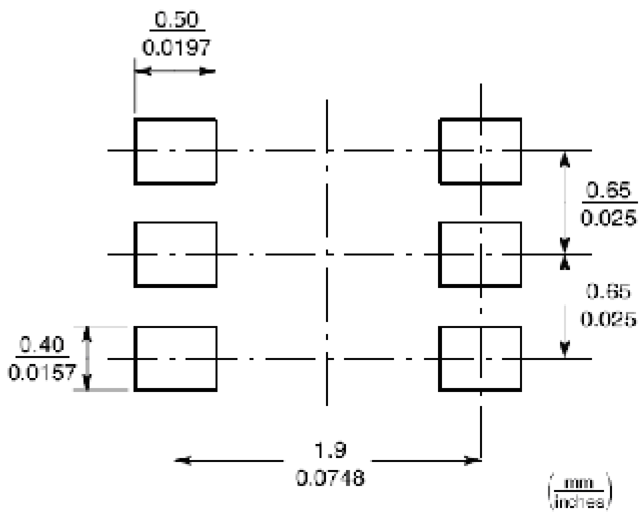
Electrical Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	60	-	-	V	V_{GS}=0V, I_D=250μA
$V_{GS(th)}$	0.5	-	1.5	V	I_D=250μA, V_{DS}=V_{GS}
I_{GSS}	-	-	±10	μA	V_{GS}=±16V, V_{DS}=0V
I_{DSS}	-	-	1	μA	V_{DS}=60V, V_{GS}=0V
$R_{DS(ON)}$	-	1.3	3	Ω	V_{GS}=4.5V, I_D=200mA
	-	1.7	5.1	Ω	V_{GS}=2.5V, I_D=100mA
G_{FS}	100	322	-	mS	V_{DS}=5V, I_D=100mA
Dynamic					
C_{iss}	-	25.6	-	pF	V_{DS}=30V, V_{GS}=0V, f=1MHz
C_{oss}	-	8.8	-	pF	
C_{rss}	-	6.8	-	pF	
$t_{d(on)}$	-	5.8	-	ns	V_{DD}=30V, I_D=200mA, V_{GS}=10V, R_G=25Ω
t_r	-	0.8	-	ns	
$t_{d(off)}$	-	19	-	ns	
t_f	-	1.4	-	ns	
Qg	-	0.82	-	nC	I_D=0.5A, V_{DS}=48V, V_{GS}=4.5V
Qgs	-	0.34	-	nC	
Qgd	-	0.2	-	nC	

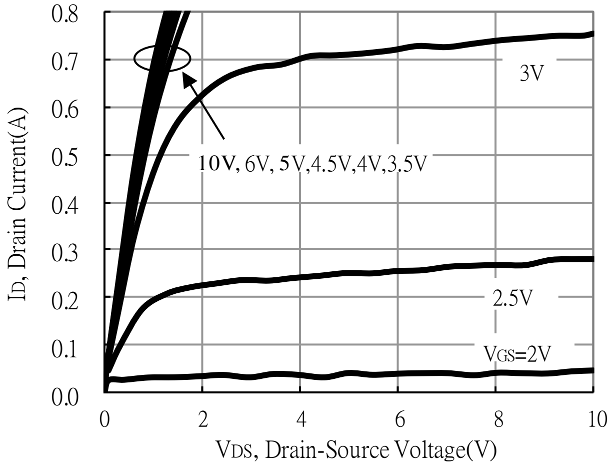
Source-Drain Diode					
*V_{SD}	-	0.74	1.2	V	V_{GS}=0V, I_S=100mA
*trr	-	8.2	-	ns	I_F=0.5A, dI_F/dt=100A/μs
*Qrr	-	2.3	-	nC	

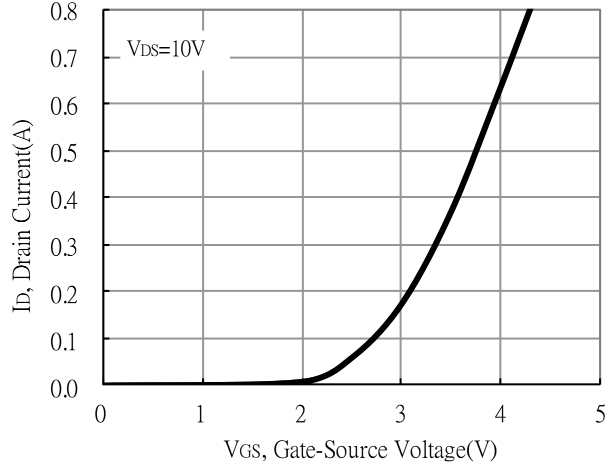
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

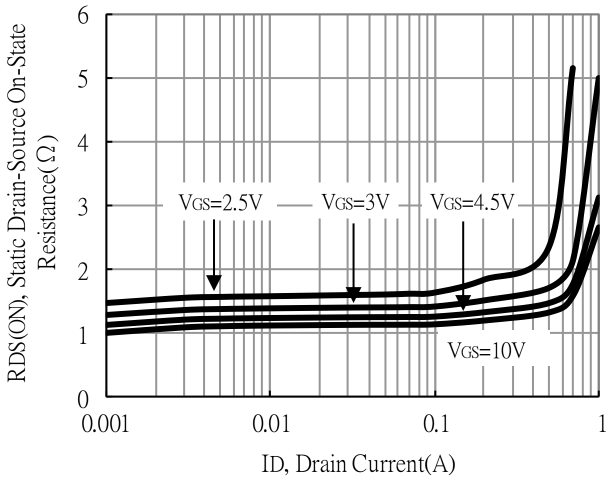
Recommended Soldering Footprint

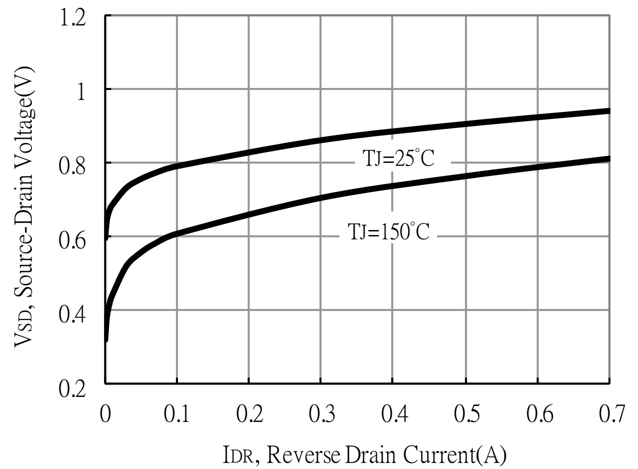


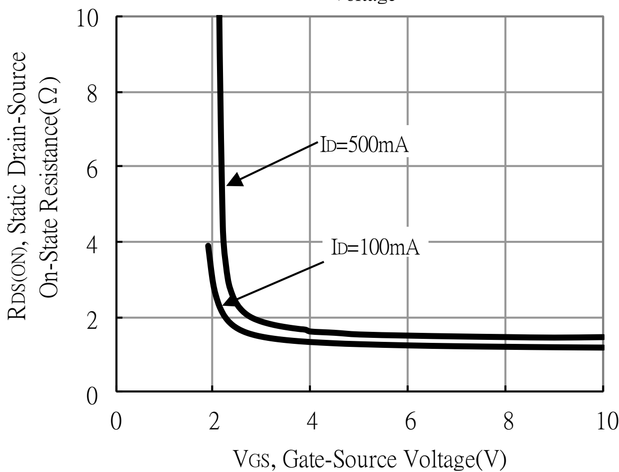
Typical Characteristics

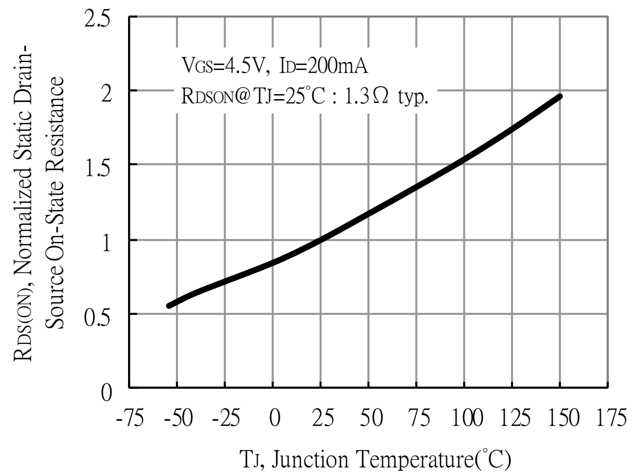




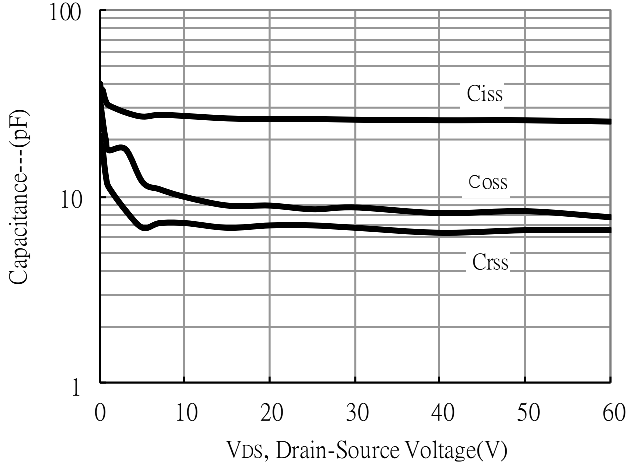


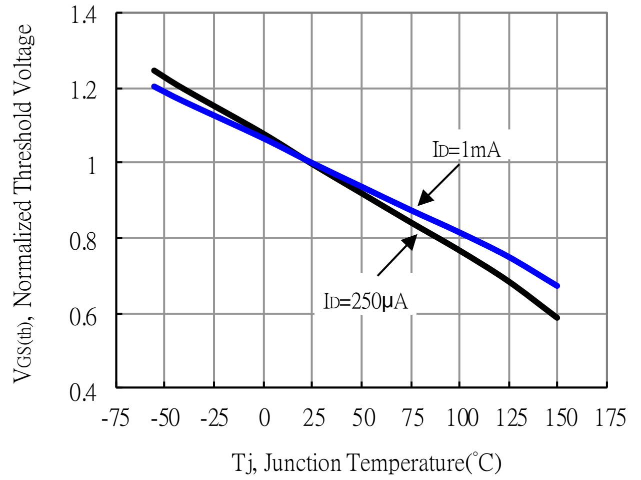


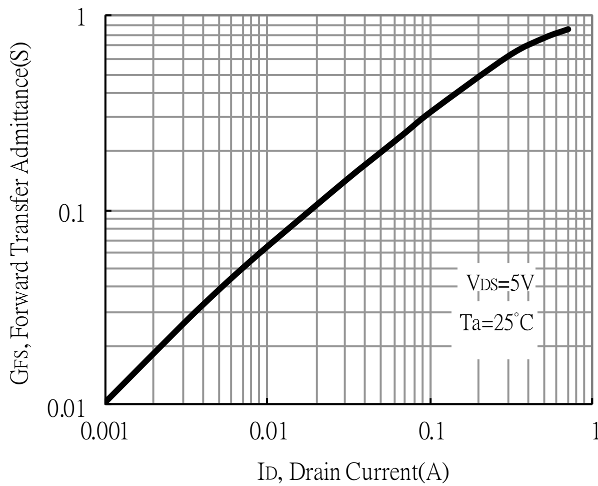


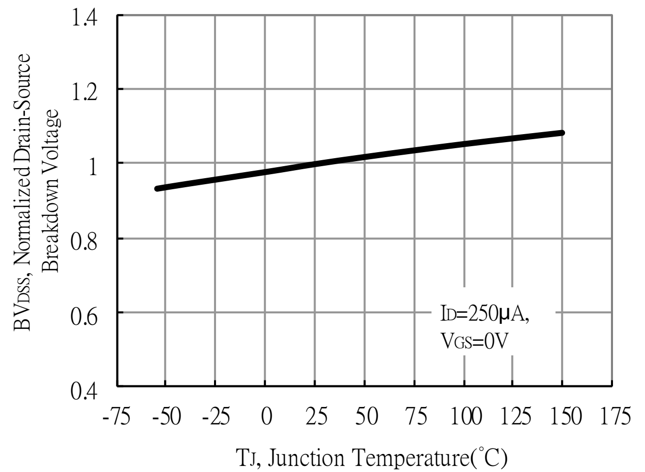


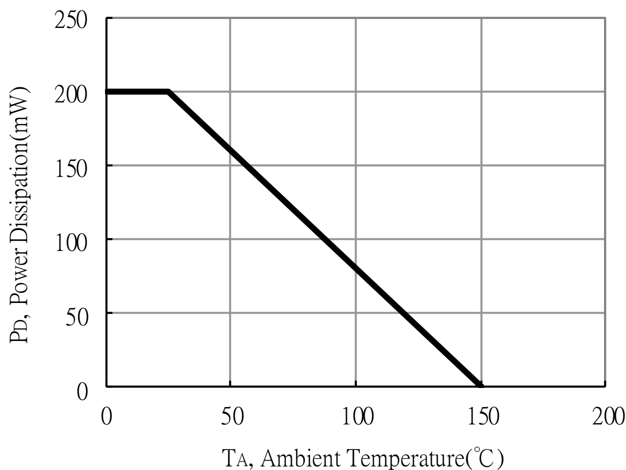
Typical Characteristics(Cont.)

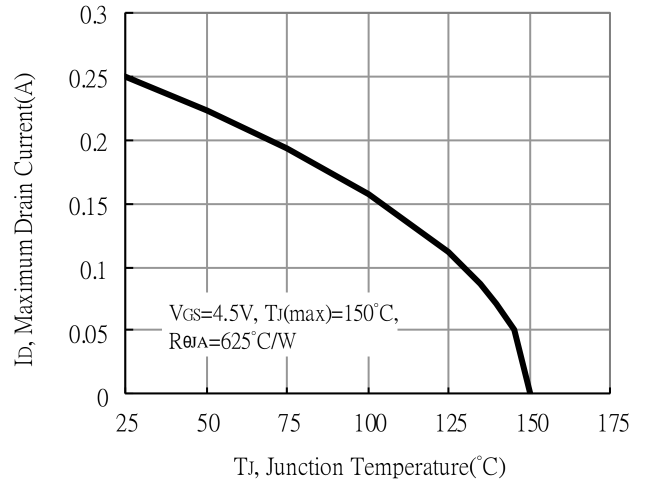




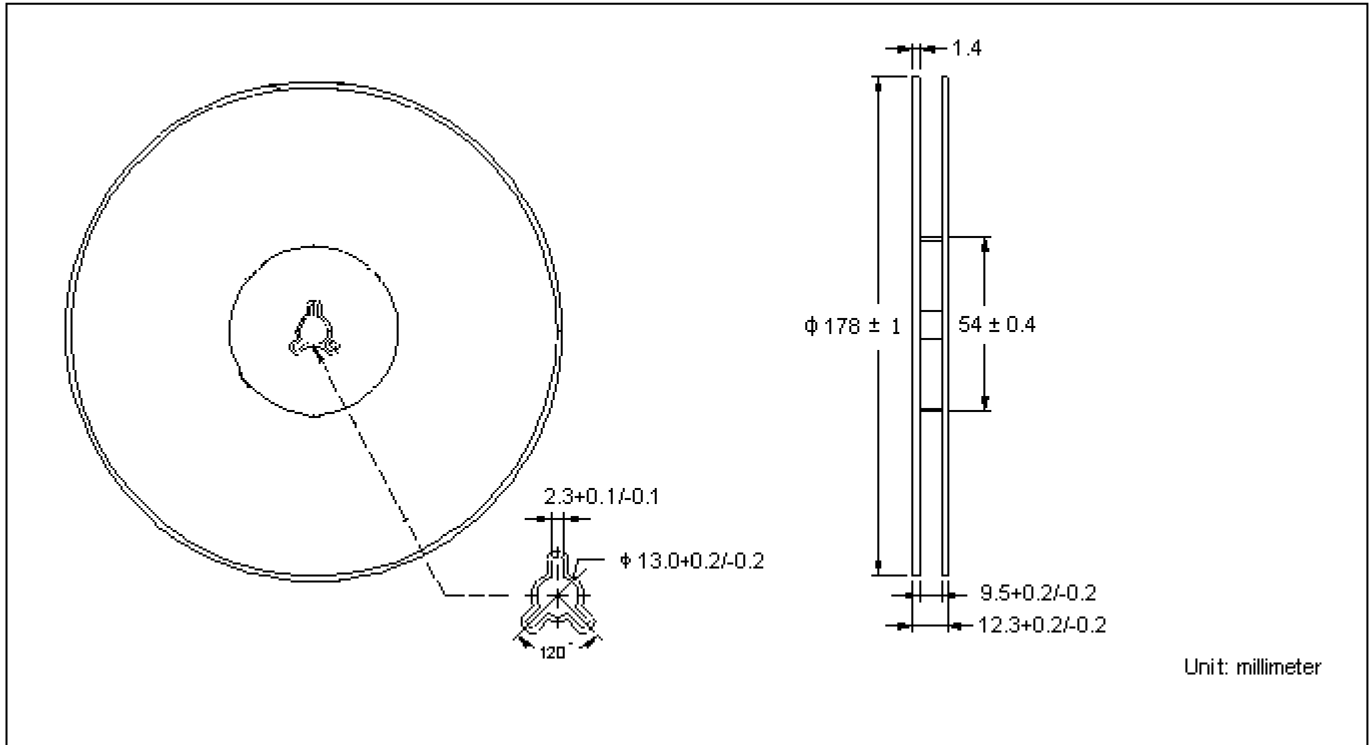




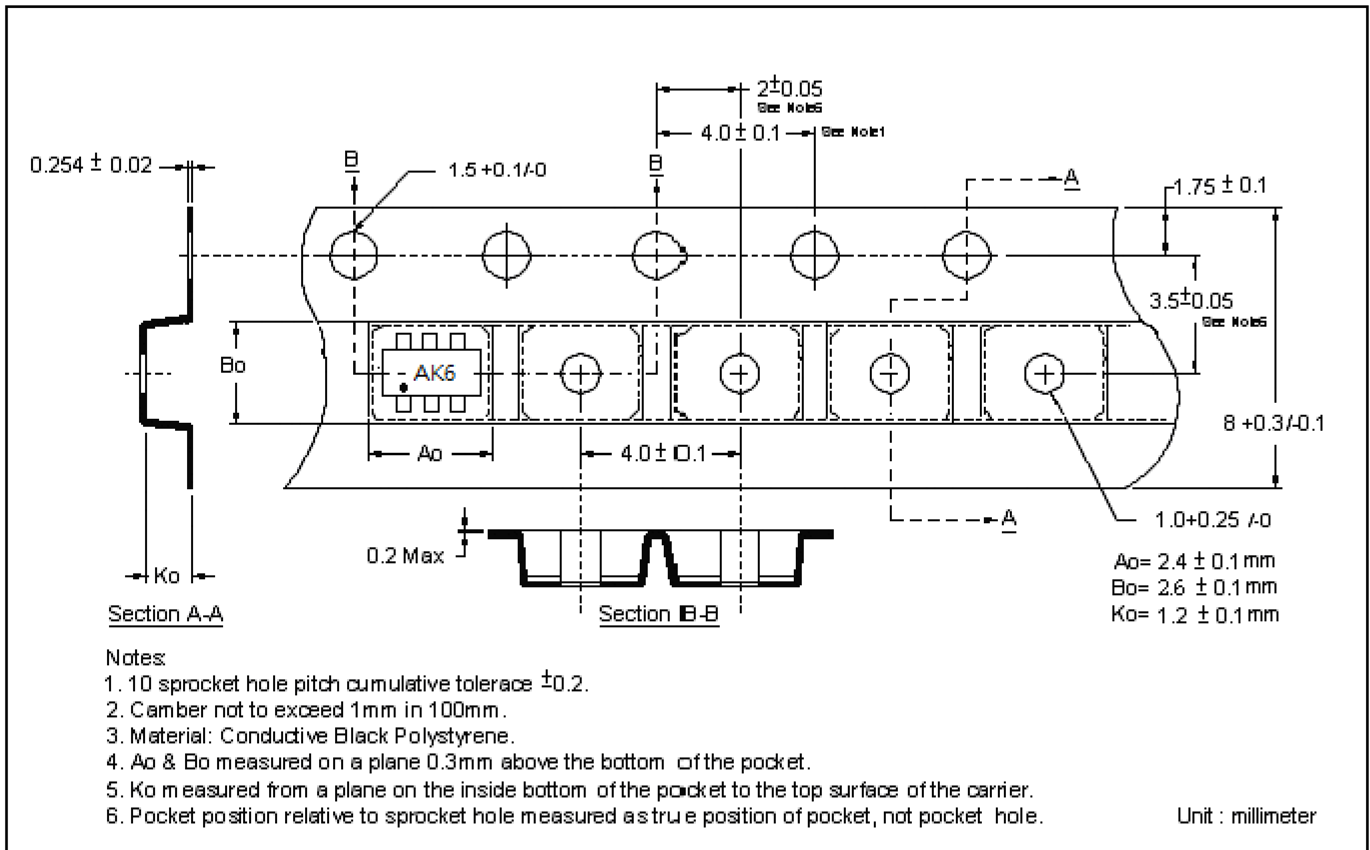




Reel Dimension



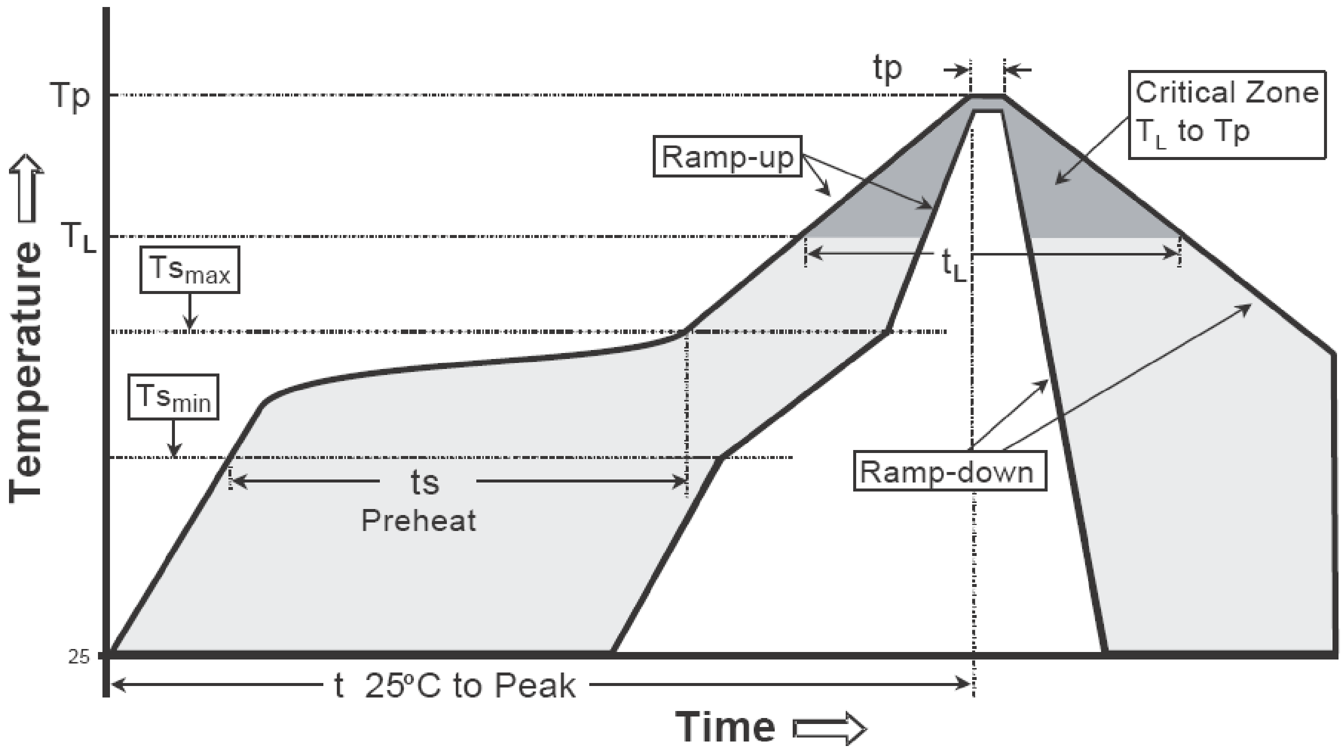
Carrier Tape Dimension



Recommended wave soldering condition

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

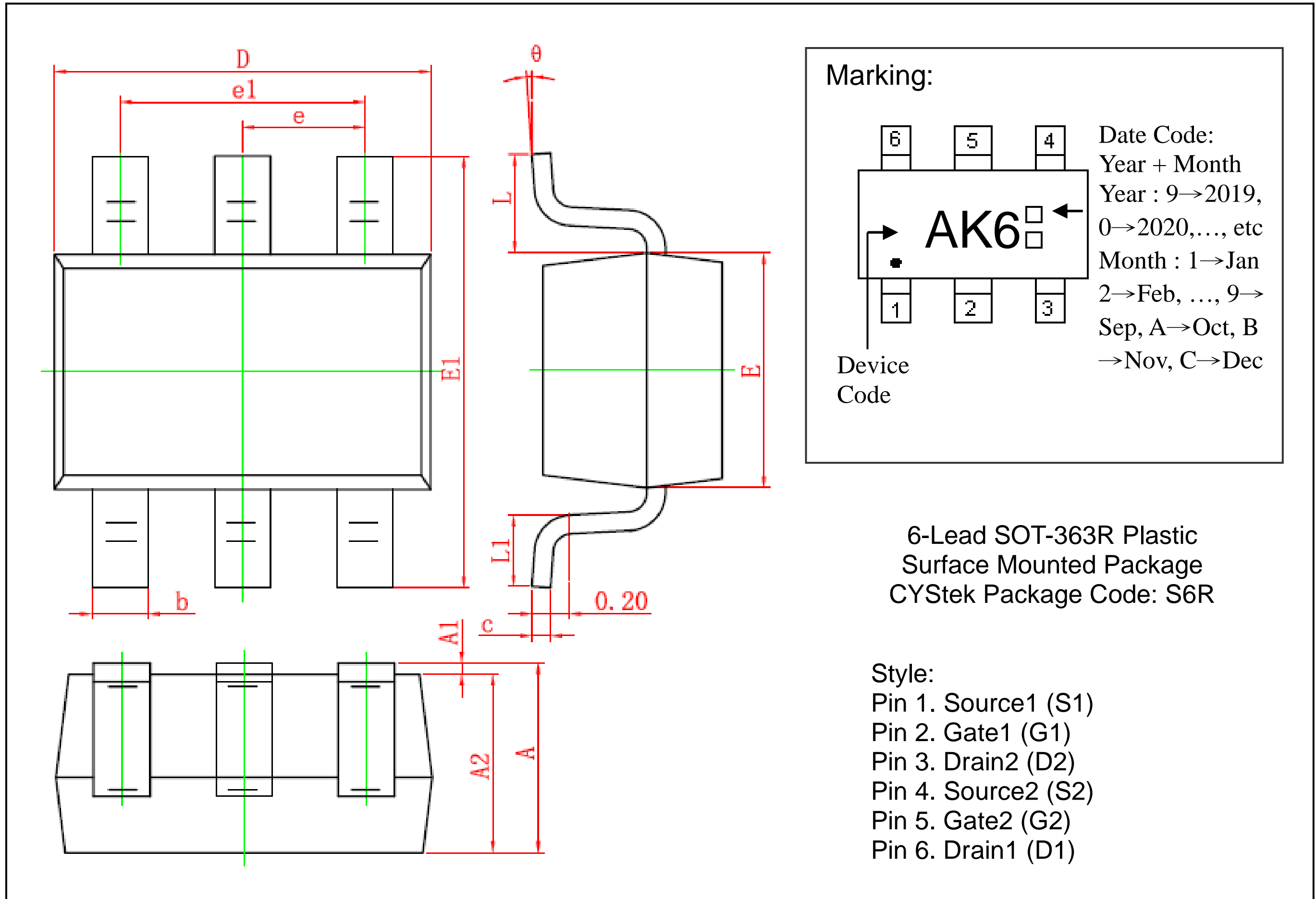
Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax 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 (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-363 Dimension



DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043	E1	2.150	2.450	0.085	0.096
A1	0.000	0.100	0.000	0.004	e	0.650	TYP	0.026	TYP
A2	0.900	1.000	0.035	0.039	e1	1.200	1.400	0.047	0.055
b	0.150	0.350	0.006	0.014	L	0.525	REF	0.021	REF
c	0.080	0.150	0.003	0.006	L1	0.260	0.460	0.010	0.018
D	2.000	2.200	0.079	0.087	θ	0°	8°	0°	8°
E	1.150	1.350	0.045	0.053					

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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