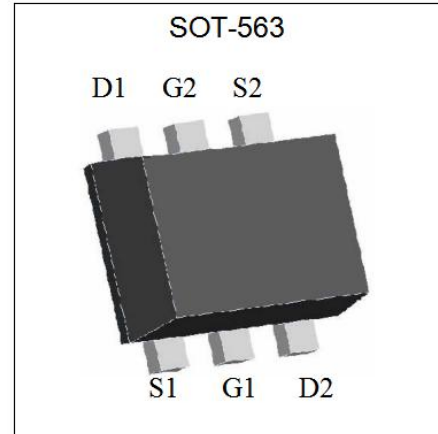
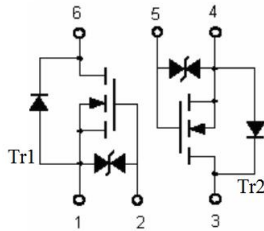


### N-Channel Enhancement Mode Field Effect Transistor

#### Features

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

**MARKING: KL**



#### Absolute Maximum Ratings (T<sub>a</sub> = 25 °C)

| Parameter  | Symbol           | Limits       | Unit |
|--|------------------|--------------|------|
| Drain-Source Voltage   | V <sub>DSS</sub> | 30           | V    |
| Gate-Source Voltage  | V <sub>GS</sub>  | ±8           | V    |
| Continuous Drain Current @ V <sub>GS</sub> =4.5V, T <sub>A</sub> =25°C | I <sub>D</sub>   | 0.3          | A    |
| Continuous Drain Current @ V <sub>GS</sub> =4.5V, T <sub>A</sub> =85°C |                  | 0.22         |      |
| Pulsed Drain Current   | I <sub>DM</sub>  | 1.6 (Note 1) |      |
| Power Dissipation  | P <sub>d</sub>   | 150 (Note 2) | mW   |
| Operating Junction Temperature Range                                   | T <sub>j</sub>   | -55~+150     | °C   |
| Storage Temperature Range  | T <sub>stg</sub> | -55~+150     | °C   |

Note : 1. Pulse test, pulse width ≤ 300μs, duty ≤ 2%  
2. 120mW per element must not be exceeded.

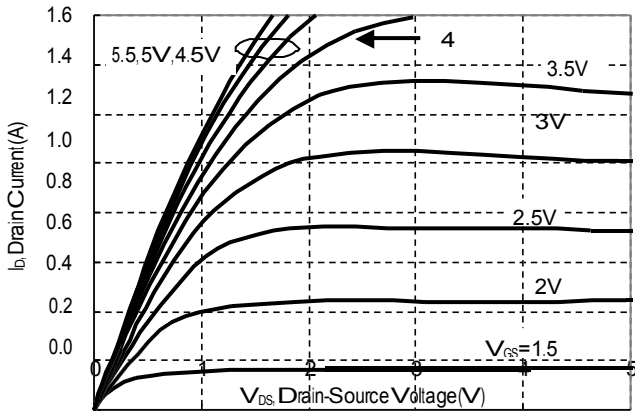
### Characteristics at $T_a = 25\text{ }^\circ\text{C}$

| Symbol                    | Min. | Typ. | Max.    | Unit     | Test Conditions                                    |
|---------------------------|------|------|---------|----------|--|
| <b>Static</b>             |      |      |         |          |  |
| $BV_{DSS}^*$              | 30   | -    | -       | V        | $V_{GS}=0, I_D=10\mu A$                            |
| $V_{GS(th)}$              | 0.5  | 0.78 | 1.1     | V        | $V_{DS}=V_{GS}, I_D=250\mu A$                      |
| $I_{GSS}$                 | -    | -    | $\pm 1$ | $\mu A$  | $V_{GS}=\pm 8V, V_{DS}=0$                          |
| $I_{DSS}$                 | -    | -    | 100     | nA       | $V_{DS}=30V, V_{GS}=0$                             |
| $R_{DS(on)}^*$            | -    | 0.85 | 1.5     | $\Omega$ | $V_{GS}=4.5V, I_D=200mA$                           |
|                           | -    | 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       | $V_{DS}=10V, I_D=200mA$                            |
| <b>Dynamic</b>            |      |      |         |          |  |
| $C_{iss}$                 | -    | 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       | $V_{DD}=15V, I_D=200mA, V_{GS}=4.5V, R_G=10\Omega$ |
| $t_r$                     | -    | -    | 25      |          |  |
| $t_{d(off)}$              | -    | -    | 50      |          |  |
| $t_f$                     | -    | -    | 25      |          |  |
| <b>Source-Drain Diode</b> |      |      |         |          |  |
| $I_S$                     | -    | -    | 0.3     | A        |  |
| $I_{SM}$                  | -    | -    | 2       |          |  |
| $V_{SD}$                  | -    | 0.81 | 1       | V        | $I_S=150mA, V_{GS}=0V$                             |

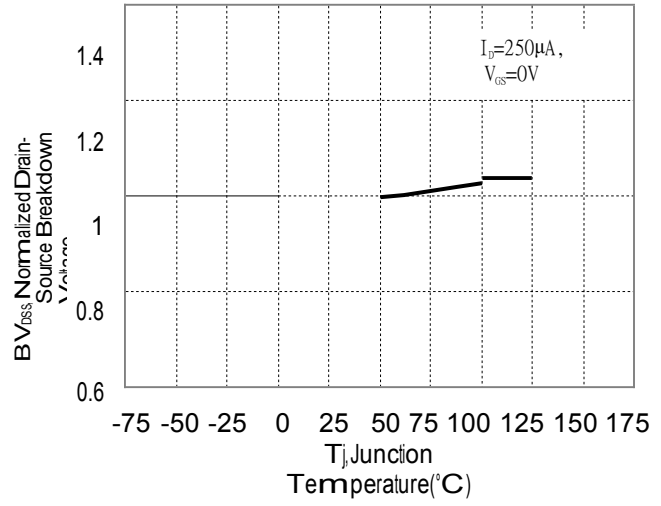


## Typical Characteristics

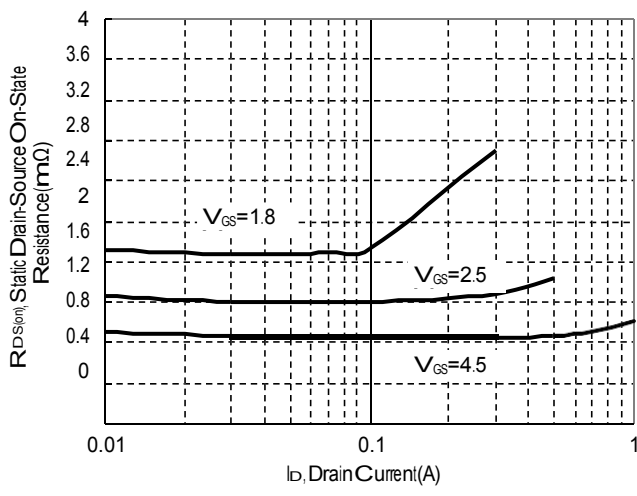
Typical Output Characteristics



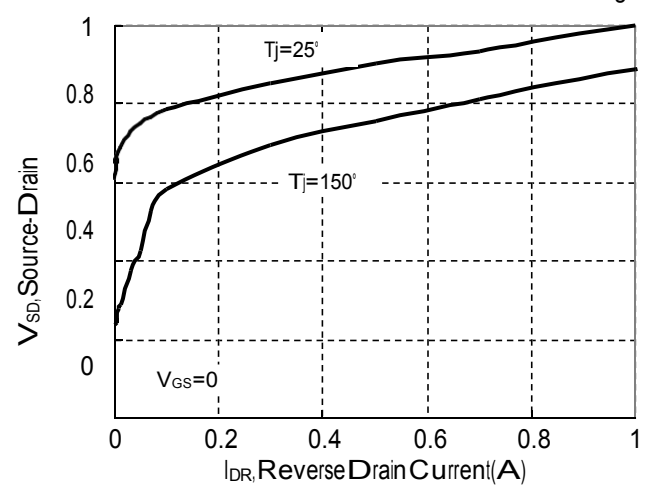
Brekdown Voltage vs Ambient Temperature



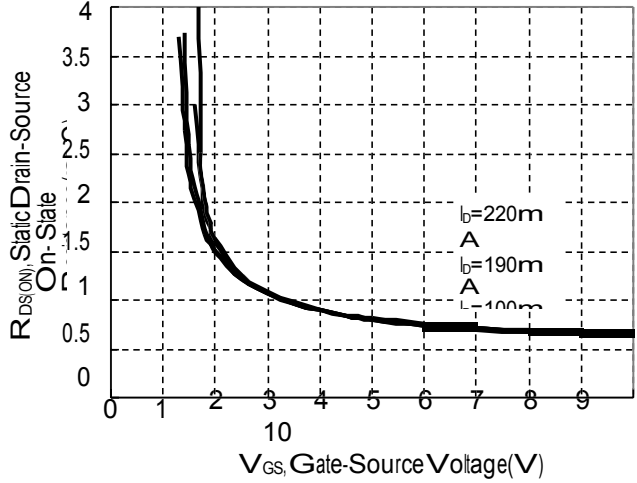
Static Drain-Source On-State resistance vs Drain Current



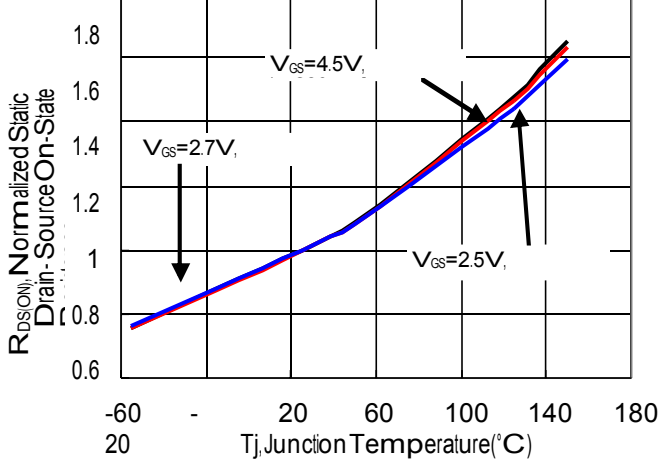
Reverse Drain Current vs Source-Drain Voltage



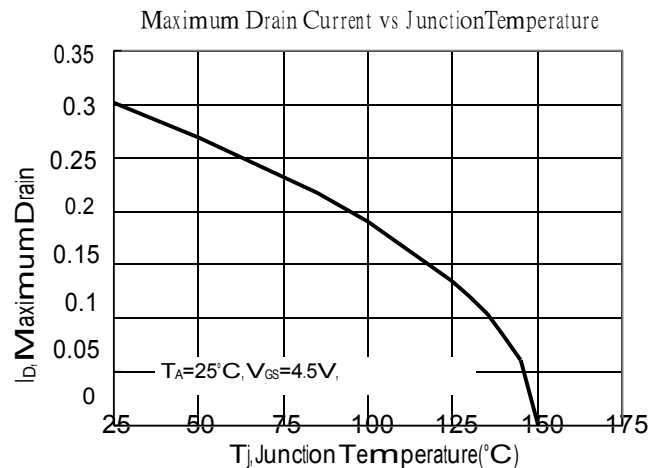
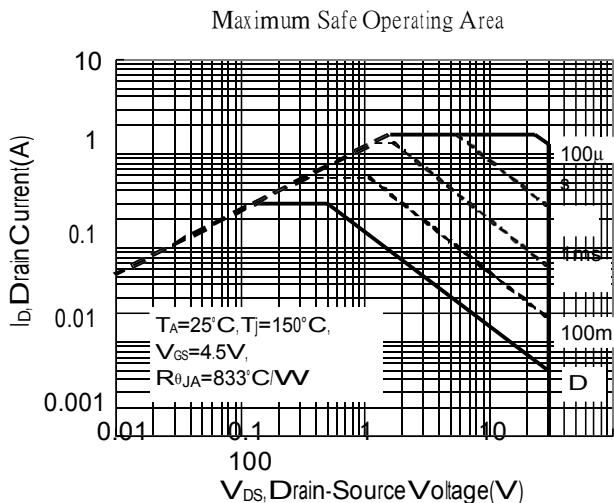
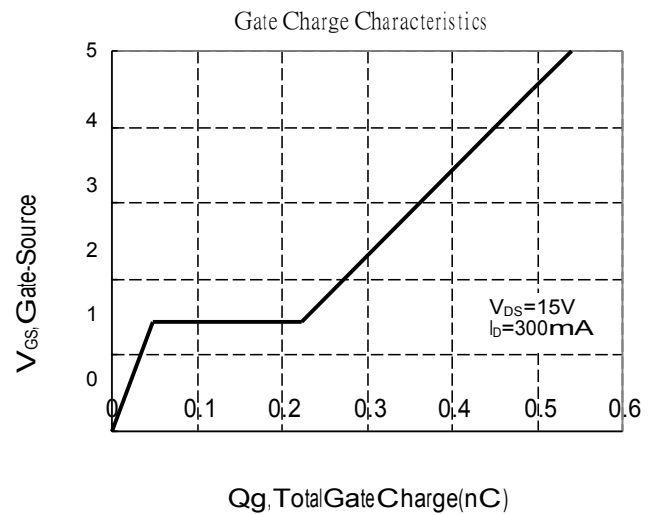
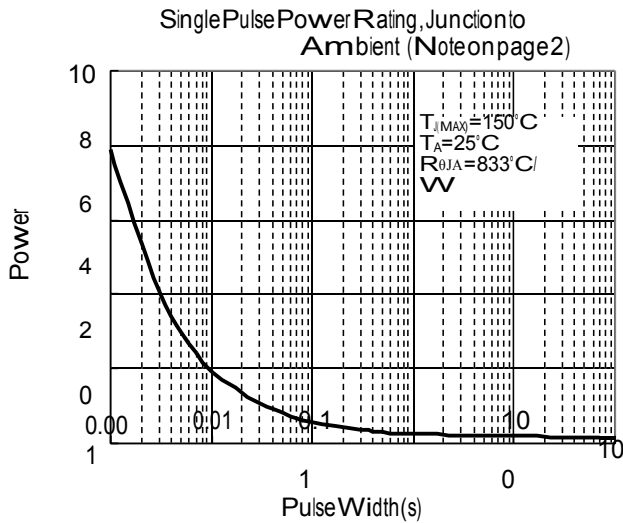
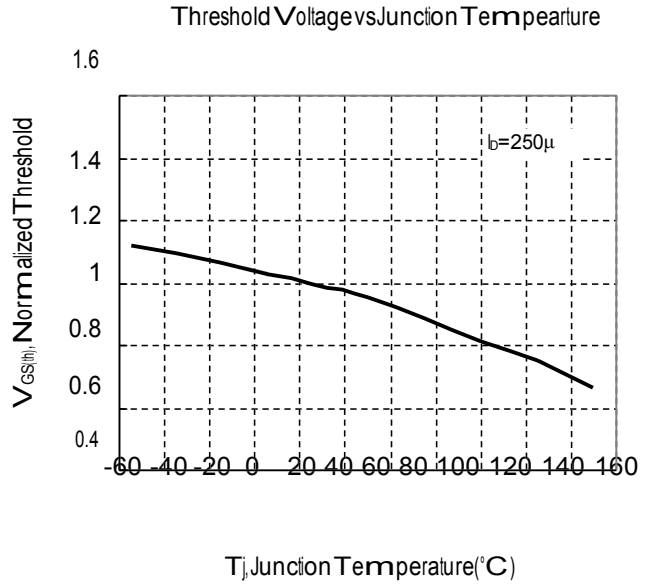
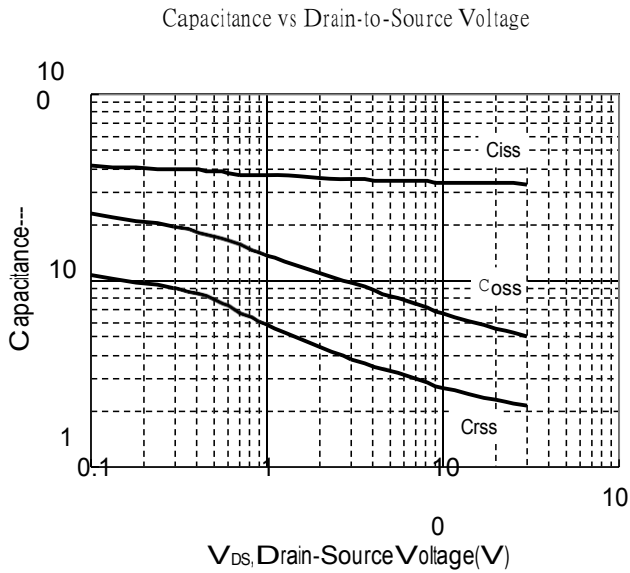
Static Drain-Source On-State Resistance vs Gate-Source Voltage



Drain-Source On-State Resistance vs Junction Temperature



### Typical Characteristics(Cont.)





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SOT-563

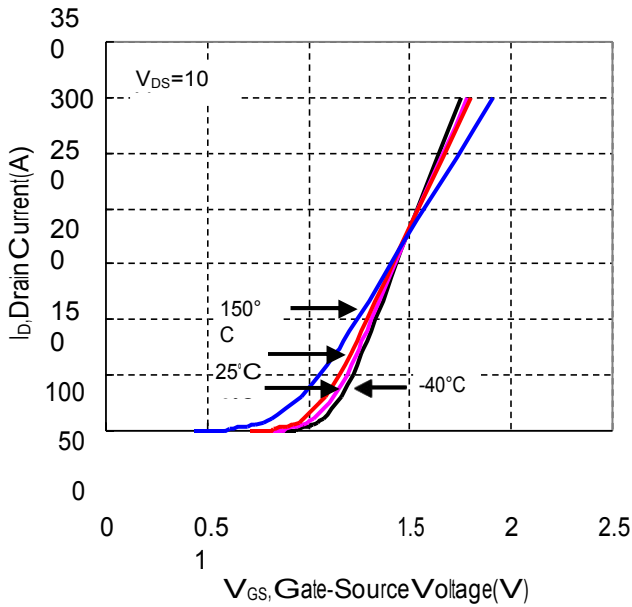


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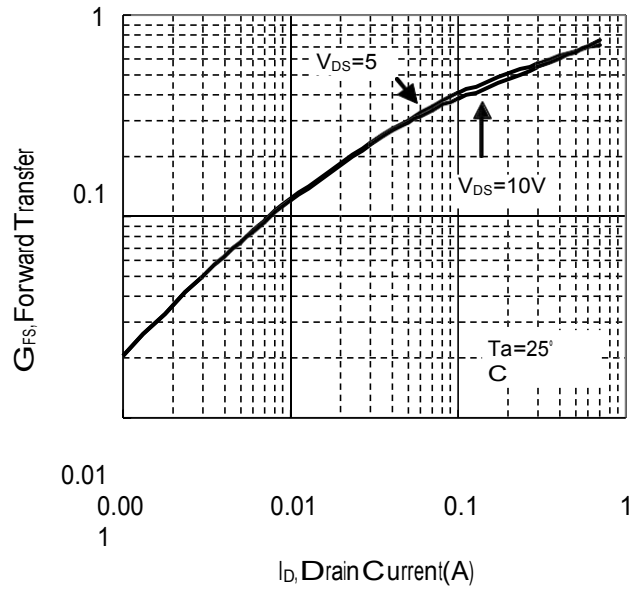
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Typical Characteristics(Cont.)

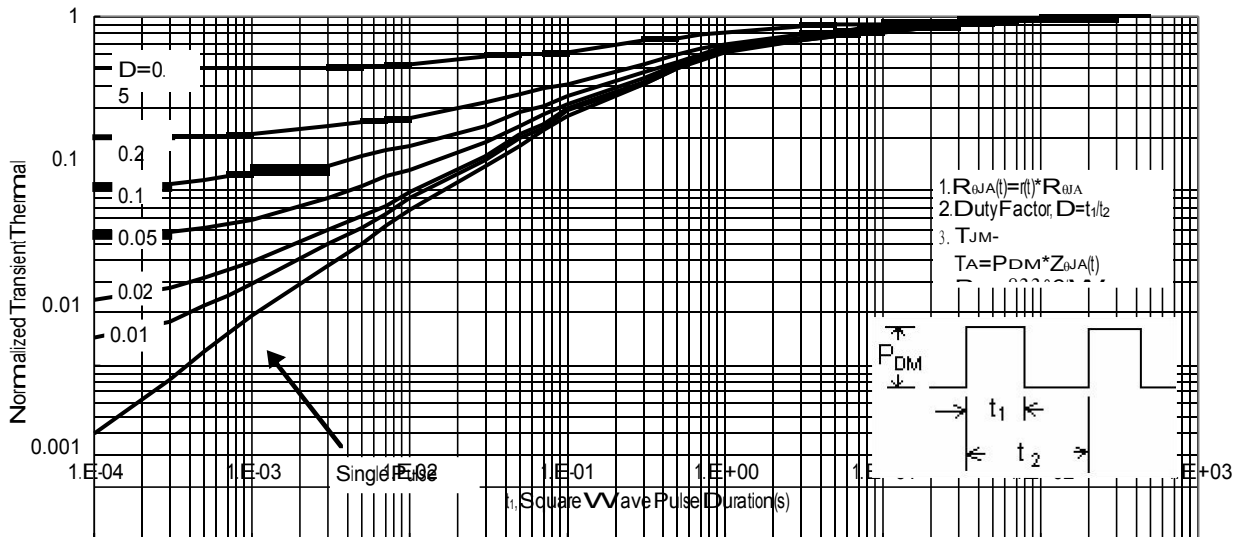
Typical Transfer Characteristics



Forward Transfer Admittance vs Drain Current

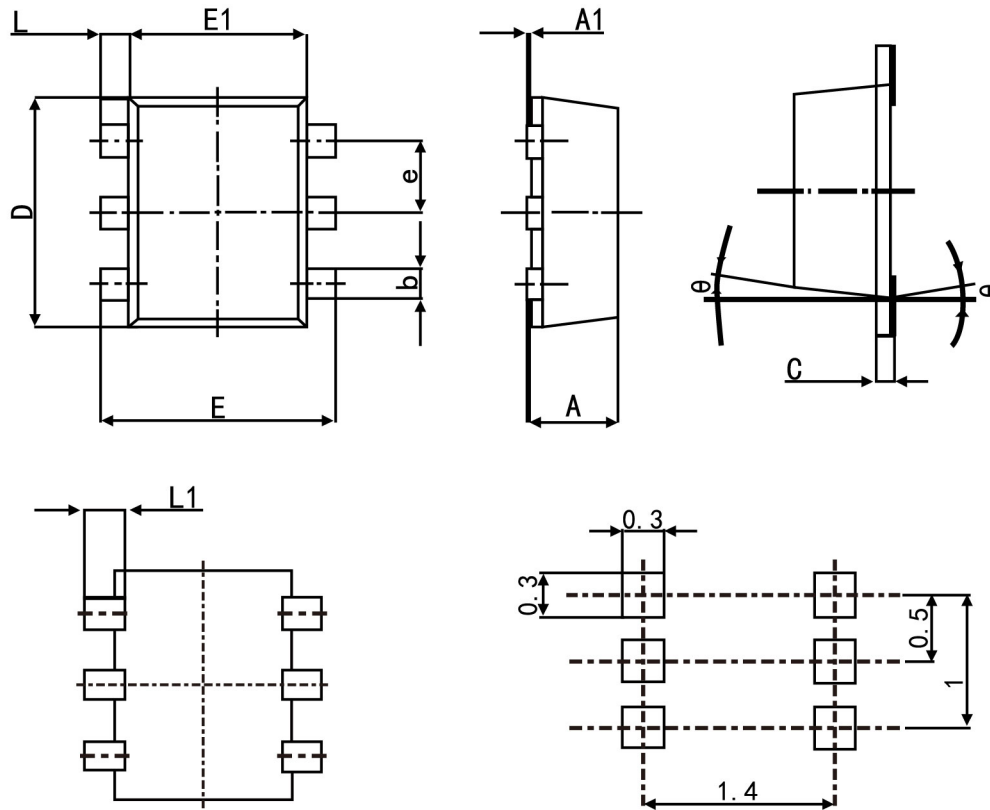


Transient Thermal Response Curves





## SOT-563 Package Outline Dimensions



| Symbol | Dimensions In Millimeters |       |
|--------|---------------------------|-------|
|        | Min.                      | Max.  |
| A      | 0.525                     | 0.600 |
| A1     | 0.000                     | 0.050 |
| e      | 0.450                     | 0.550 |
| c      | 0.090                     | 0.160 |
| D      | 1.500                     | 1.700 |
| b      | 0.170                     | 0.270 |
| E1     | 1.100                     | 1.300 |
| E      | 1.500                     | 1.700 |
| L      | 0.100                     | 0.300 |
| L1     | 0.200                     | 0.400 |
| θ      | 7° REF.                   |       |