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# FDC6324L-TP

## Integrated Load Switch

www.sot23.com.tw

### Product Summary

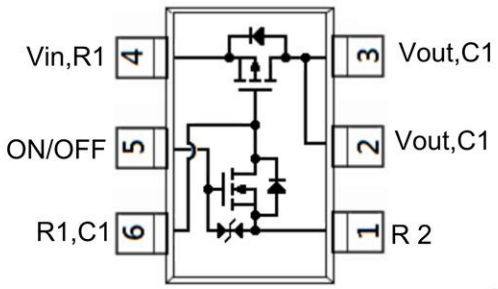
- Vdrop = 0.2V@Vin=12V, IL=2.0A, $R_{DS(ON)}$= 100mΩ
- Vdrop = 0.2V@Vin=5.0V, IL=1.8A, $R_{DS(ON)}$= 110mΩ
- Vdrop = 0.2V@Vin=2.5V, IL=1.4A, $R_{DS(ON)}$= 140mΩ

### Application

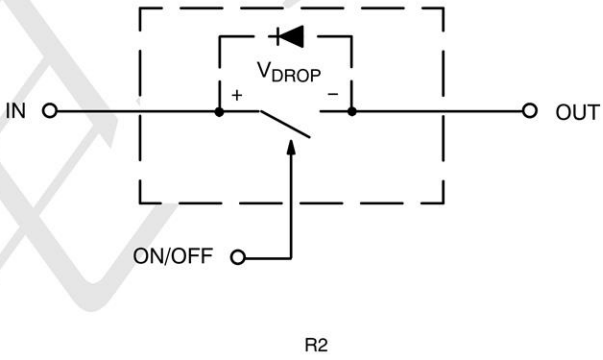
- Battery Packs
- Battery-Powered Portable Equipment
- Cellular and Cordless Telephones

### Package and Pin Configuration

**SOT23-6**




### EQUIVALENT CIRCUIT




## Marking: 324P

324P= is Part Number ,Fixed

### Absolute Maximum Ratings ($T_A$=25°C unless otherwise noted)

| PARAMETER | SYMBOL | Ratings | UNITS |
|---|---|---|---|
| Input Voltage Range(Note 1) | $V_{IN}$ | 20 | V |
| On/Off Voltage Range | $V_{ON}/V_{OFF}$ | 12 | V |
| Continuous Load Current t(Note 2,3) | $I_D$ | 2 | A |
| Pulsed Load Current(Note 4) | $I_D$ | 8 | A |
| Power Dissipation(Note 2) | $P_D$ | 0.83 | W |
| Operating Junction and Storage Temperature Range | $T_J$,$T_{STG}$ | -55~150 | °C |
| ESD, MIL-STD-883D HBM (100pF/1.5kohm) (Von/off pin) | $V_{ESD}$ | 2 | kV |
| Typical Junction to Ambient(Note 2) | $R_{\theta JA}$ | 150 | °C/W |

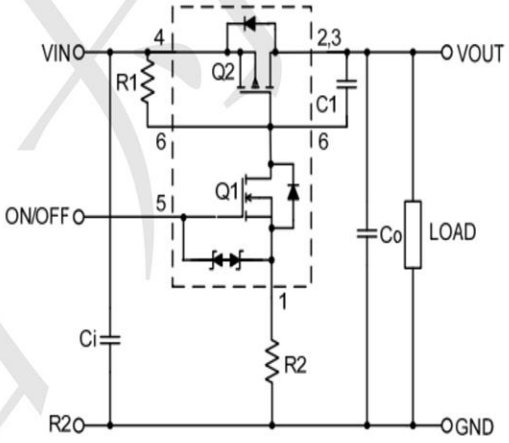
## Electrical Characteristics ( $T_A$ = 25°C unless otherwise noted )

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNITS |
|---|---|---|---|---|---|---|
| **Off Characteristics** | | | | | | |
| Leakage Current | $I_{FL}$ | $V_{IN}$=20V, $V_{ON}/V_{OFF}$=0V | - | - | 1 | uA |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=-1.0A | - | -0.76 | -1.2 | V |
| **On Characteristics** | | | | | | |
| Input Voltage Range | $V_{IN}$ | | 2.5 | - | 20 | V |
| On/Off Voltage Range | $V_{ON}/V_{OFF}$ | | 2.5 | - | 12 | V |
| Drain-Source On-State Resistance (Q2) | $R_{DS(on)}$ | $V_{GS}$=-12V, $I_D$=-2.0A | - | 84 | 100 | mΩ |
| | | $V_{GS}$=-5.0V, $I_D$=-1.8A | - | 90 | 110 | |
| | | $V_{GS}$=-2.5V, $I_D$=-1.4A | - | 110 | 140 | |

NOTES :

1. $V_{IN}$ Range can be up to 20V, but R1 and R2 must be scaled such that $V_{GS}$ do not exceed 12V.
2. $R_{\Theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins mounted on a 1 inch FR-4 with 2oz. square pad of copper
3. The maximum current rating is package limited
4. Pulse test: pulse width ≤ 300uS, duty cycle ≤ 2%

### Typical Application Circuit




| COMPONENTS | | |
|---|---|---|
| R1 | Pull-Up Resistor | Typical 10kΩ to 1MΩ* |
| R2 | Optional Slew-Rate Control | Typical 0 to 100kΩ |
| C1 | Optional Slew-Rate Control | Typical 1000pF |

## Typical Operating Characteristics

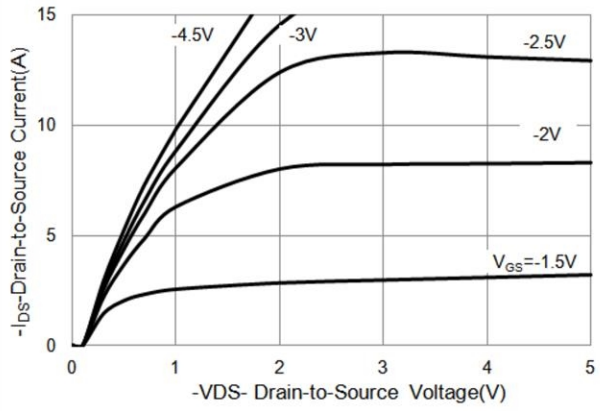



Fig.1 Output Characteristics

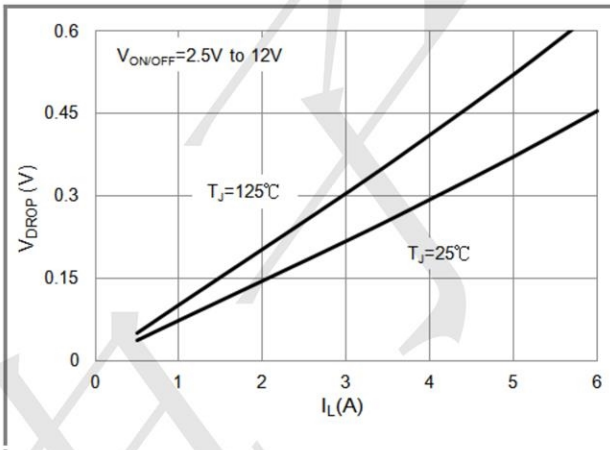



Fig.2 Vdrop vsLoad Currentat Vin= 12V

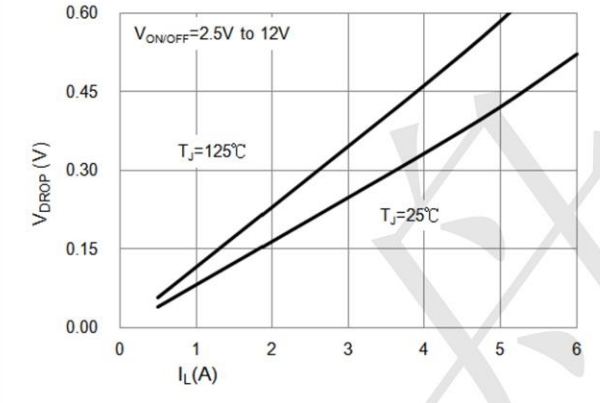



Fig.3 Vdrop vs Load Current at Vin= 4.5V

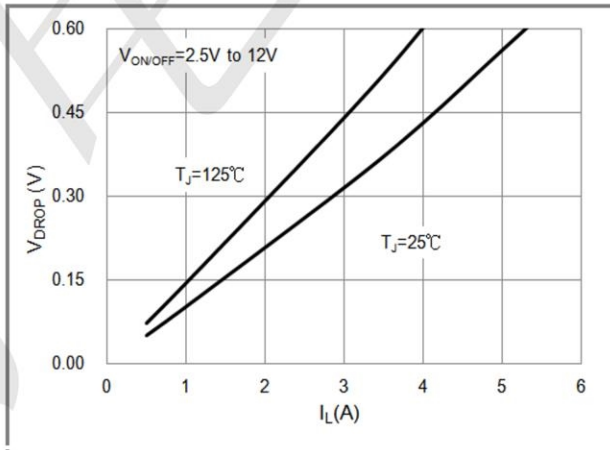



Fig.4 Vdrop vs Load Current at Vin= 2.5V

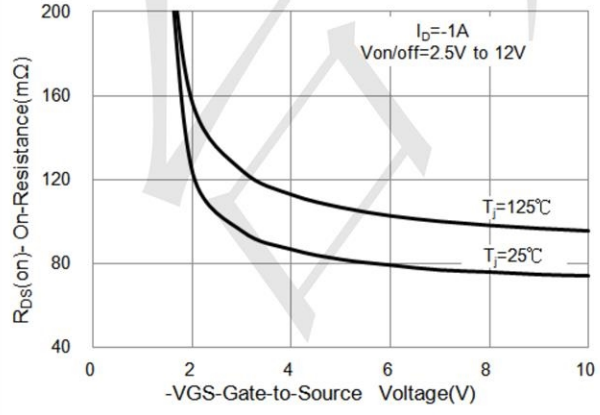



Fig.5 On-Resistance Variation with VGS.

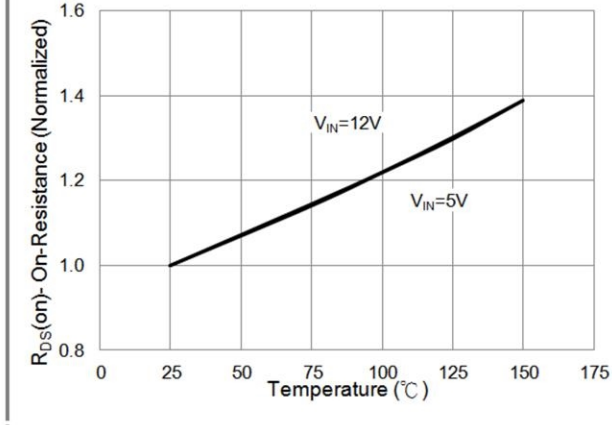



Fig.6 Normalize Rds(on) vs Junction Temperature

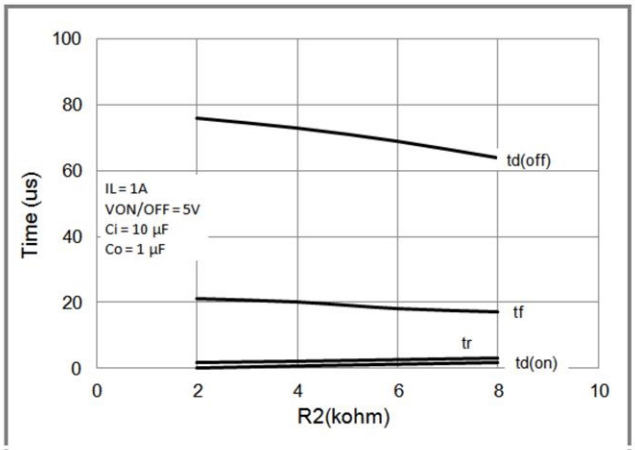



Fig.7 Switching Variation R2 at Vin=12V, R1=20kΩ

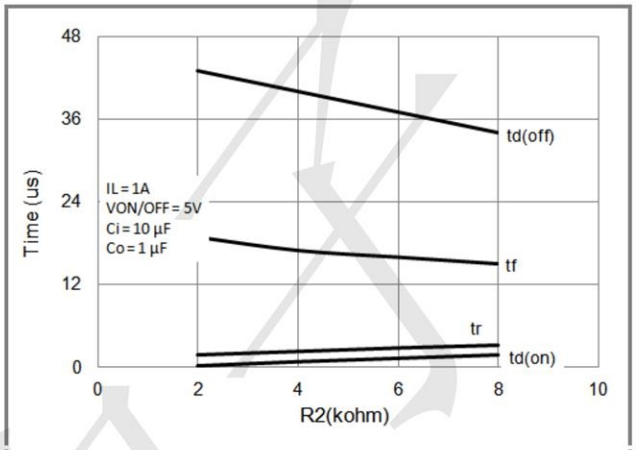



Fig.8 Switching Variation R2 at Vin= 5V, R1= 20kΩ

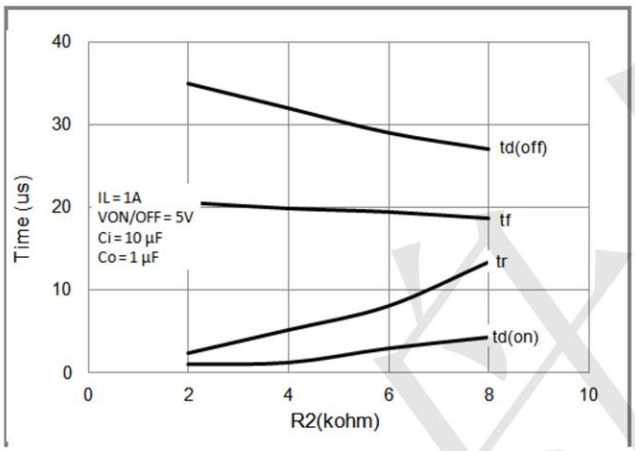



Fig.9 Switching Variation R2 at Vin=3.3V, R1=20kΩ

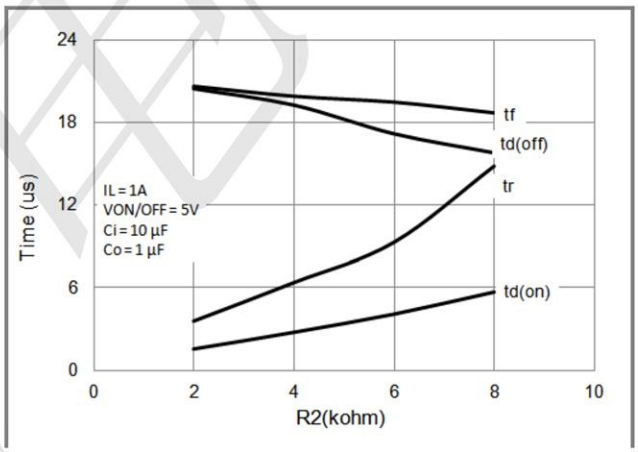



Fig.10 Switching Variation R2 at Vin=2.5V, R1=20kΩ

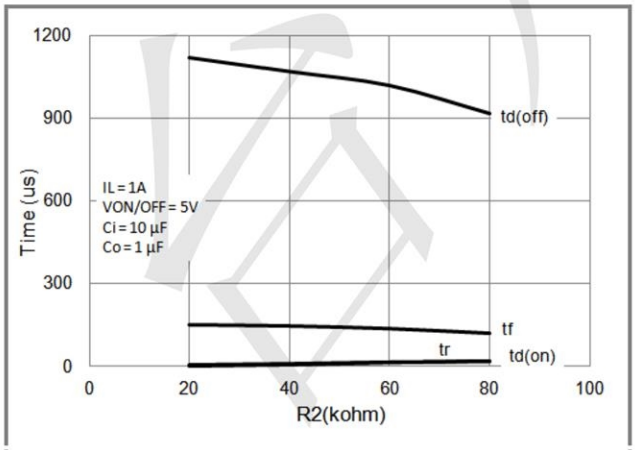



Fig.11 Switching Variation R2 at Vin=12V, R1=300k

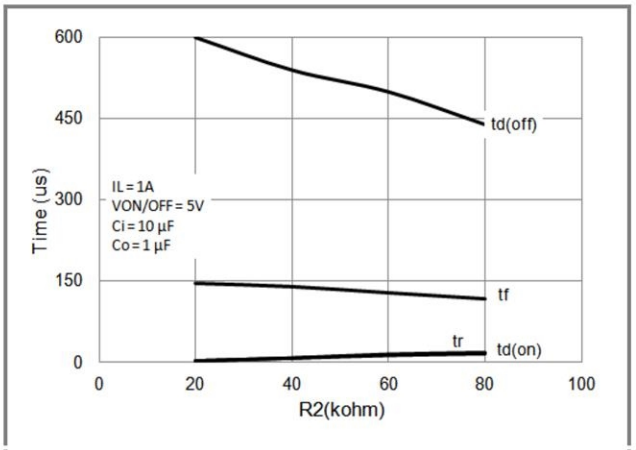



Fig.12 Switching Variation R2 at Vin=5V, R1=300k

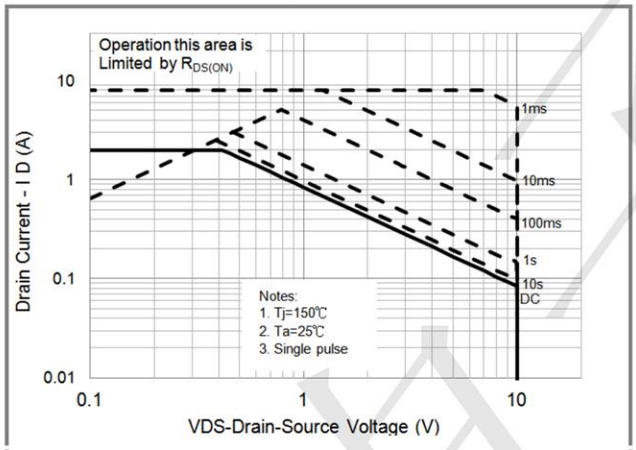



**Fig.13Switching Variation R2 at Vin=12V, R1=20kΩ**

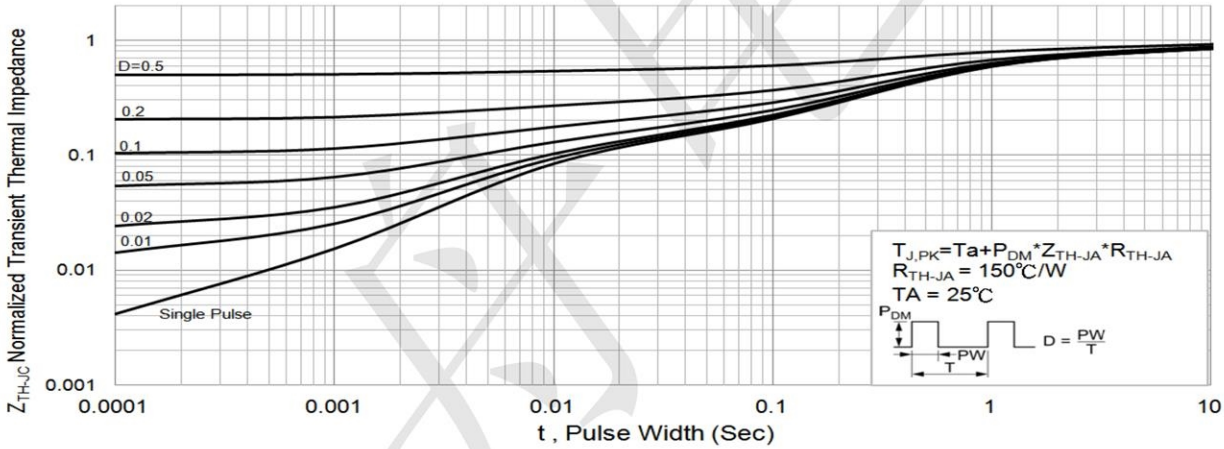
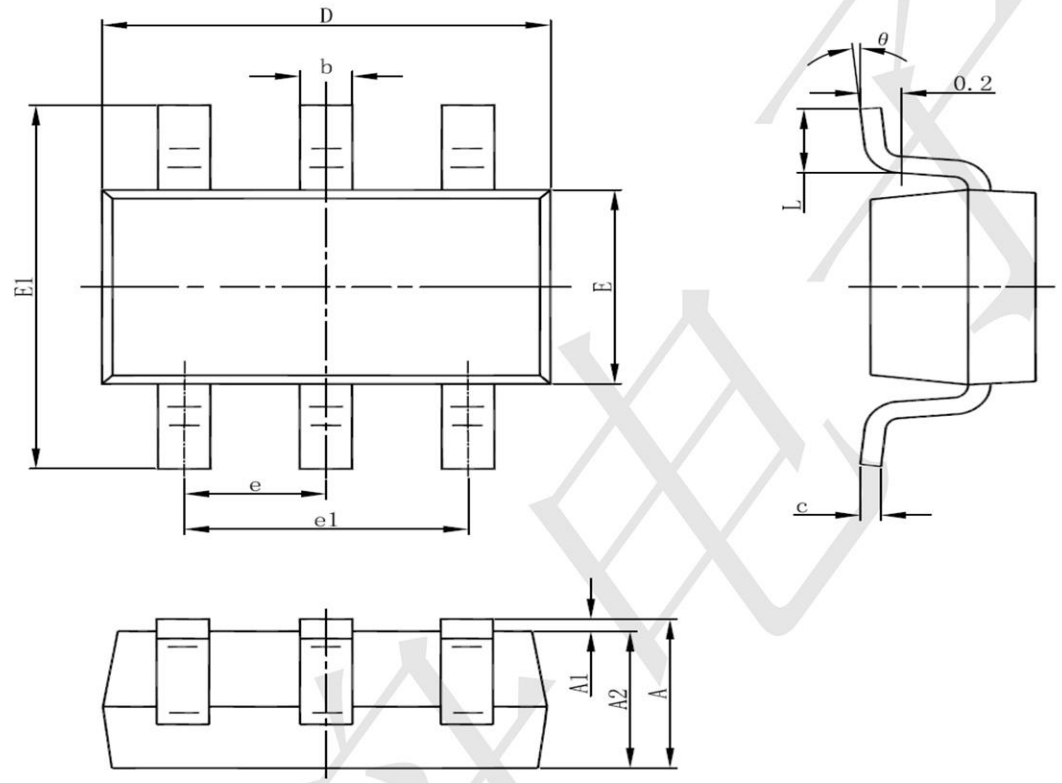



**Fig.14 Transient Thermal Response Curve**

## SOT23-6 Package Information




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

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