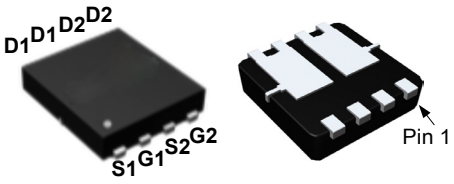
## Features

- -30V/-42A
  $R_{DS(ON)}$=10mΩ(typ.)@$V_{GS}$=-10V
  $R_{DS(ON)}$=14mΩ(typ.)@$V_{GS}$=-4.5V
- 100% UIS + $R_g$ Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

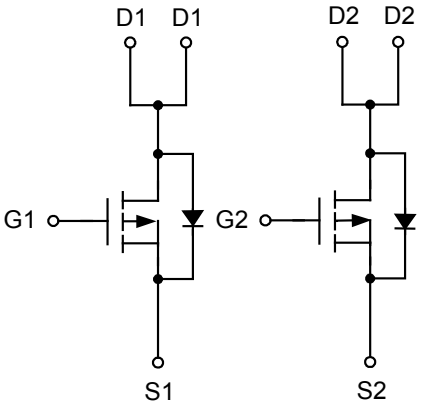
## Applications

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.

## Pin Description




PDFN5*6-8L




Dual P-Channel MOSFET

## Absolute Maximum Ratings ($T_A$=25°C Unless Otherwise Noted)

| Symbol | Parameter | | Rating | Unit |
|---|---|---|---|---|
| **Common Ratings** | | | | |
| $V_{DSS}$ | Drain-Source Voltage | | -30 | V |
| $V_{GSS}$ | Gate-Source Voltage | | ±25 | |
| $T_J$ | Maximum Junction Temperature | | 150 | °C |
| $T_{STG}$ | Storage Temperature Range | | -55 to 150 | |
| $I_S$ | Diode Continuous Forward Current | $T_C$=25°C | -42 | A |
| $I_D$ | Continuous Drain Current | $T_C$=25°C | -42 | A |
| | | $T_C$=100°C | -32 | |
| $I_{DM}$ [a] | Pulsed Drain Current | $T_C$=25°C | -126 | |
| $P_D$ | Maximum Power Dissipation | $T_C$=25°C | 45 | W |
| | | $T_C$=100°C | 20 | |
| $R_{\theta JC}$ | Thermal Resistance-Junction to Case | | 5 | °C/W |
| $R_{\theta JA}$ [c] | Thermal Resistance-Junction to Ambient | Steady state | 95 | °C/W |
| $I_{AS}$ [b] | Avalanche Current, Single pulse | L=0.1mH | -30 | A |
| $E_{AS}$ [b] | Avalanche Energy, Single pulse | L=0.1mH | 45 | mJ |

Note * : Calculated continuous current based on maximum allowable junction temperature. Bonding wire limitation current is 8A.
Note a : Pulse width limited by max. junction temperature.
Note b : UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature $T_j$=25°C).
Note c : Surface Mounted on 1in$^2$ pad area.

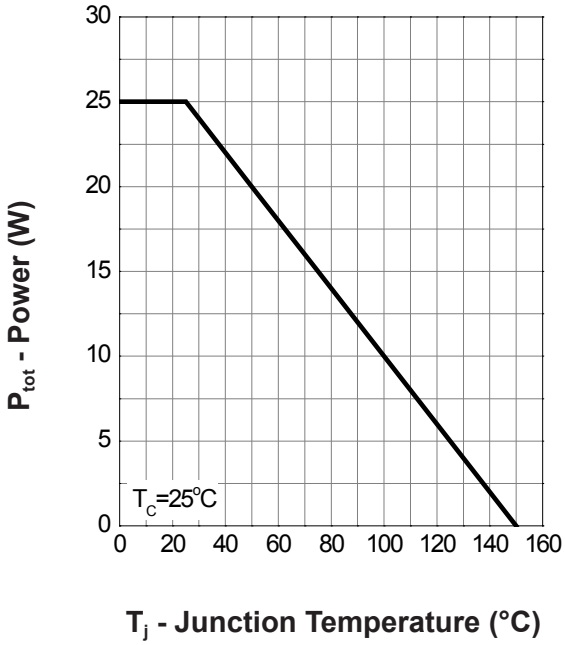
## Electrical Characteristics ($T_A$ = 25°C unless otherwise noted)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| **Static Characteristics** | | | | | | |
| $BV_{DSS}$ | Drain-Source Breakdown Voltage | $V_{GS}$=0V, $I_{DS}$=-250μA | -30 | - | - | V |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | $V_{DS}$=-24V, $V_{GS}$=0V | - | - | -1 | μA |
| | | $T_J$=85°C | - | - | -30 | |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}$=$V_{GS}$, $I_{DS}$=-250μA | -1 | -2 | -3 | V |
| $I_{GSS}$ | Gate Leakage Current | $V_{GS}$=±25V, $V_{DS}$=0V | - | - | ±100 | nA |
| $R_{DS(ON)}$ [d] | Drain-Source On-state Resistance | $V_{GS}$=-10V, $I_{DS}$=-10A | - | 10 | 13 | mΩ |
| | | $V_{GS}$=-4.5V, $I_{DS}$=-7A | - | 14 | 17 | |
| **Diode Characteristics** | | | | | | |
| $V_{SD}$ [d] | Diode Forward Voltage | $I_{SD}$=-4A, $V_{GS}$=0V | - | -0.8 | -1.1 | V |
| $t_{rr}$ | Reverse Recovery Time | $I_{SD}$=-6A, $dI_{SD}$/dt=100A/μs | - | 19 | - | ns |
| $Q_{rr}$ | Reverse Recovery Charge | | - | 10 | - | nC |
| **Dynamic Characteristics** [e] | | | | | | |
| $R_G$ | Gate Resistance | $V_{GS}$=0V,$V_{DS}$=0V,F=1MHz | - | 7 | - | Ω |
| $C_{iss}$ | Input Capacitance | $V_{GS}$=0V, $V_{DS}$=-15V, Frequency=1.0MHz | - | 3580 | 4770 | pF |
| $C_{oss}$ | Output Capacitance | | - | 311 | - | |
| $C_{rss}$ | Reverse Transfer Capacitance | | - | 286 | - | |
| $t_{d(ON)}$ | Turn-on Delay Time | $V_{DD}$=-15V, $R_L$=15Ω, $I_{DS}$=-1A, $V_{GEN}$=-10V, $R_G$=6Ω | - | 7 | 19 | ns |
| $t_r$ | Turn-on Rise Time | | - | 4.5 | 18 | |
| $t_{d(OFF)}$ | Turn-off Delay Time | | - | 55 | 106 | |
| $t_f$ | Turn-off Fall Time | | - | 20 | 70 | |
| **Gate Charge Characteristics** [e] | | | | | | |
| $Q_g$ | Total Gate Charge | $V_{DS}$=-10V, $V_{GS}$=-4.5V, $I_{DS}$=-6A | - | 61.8 | - | nC |
| $Q_g$ | Total Gate Charge | $V_{DS}$=-10V, $V_{GS}$=-10V, $I_{DS}$=-6A | - | 48 | 59 | |
| $Q_{gs}$ | Gate-Source Charge | | - | 6.6 | - | |
| $Q_{gd}$ | Gate-Drain Charge | | - | 13 | - | |

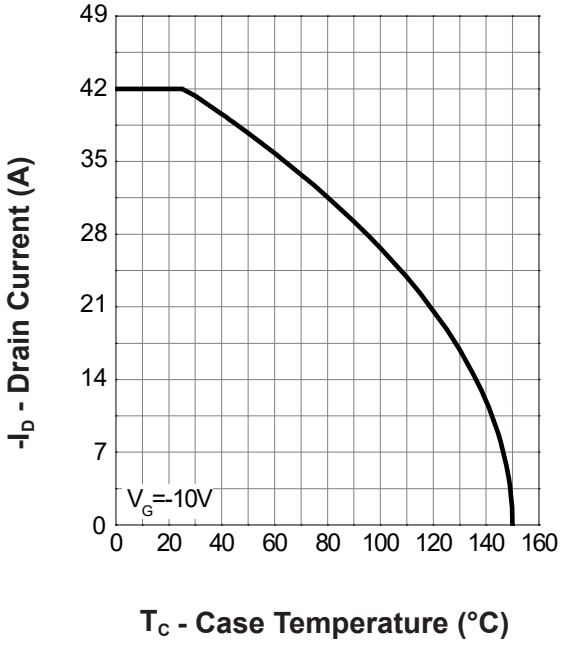
Note d：Pulse test ; pulse width≤300μs, duty cycle≤2%.
Note e：Guaranteed by design, not subject to production testing.

## Typical Operating Characteristics

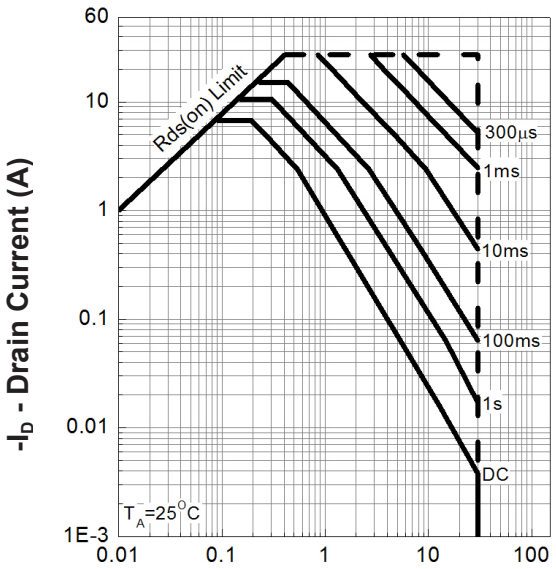
### Power Dissipation



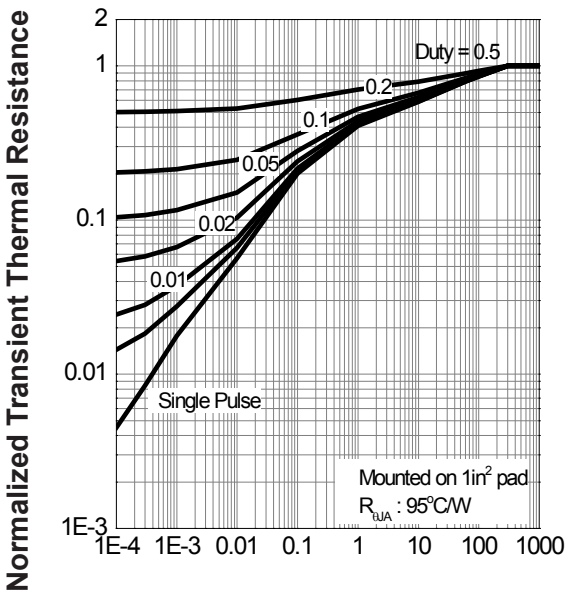

### Drain Current




### Safe Operation Area

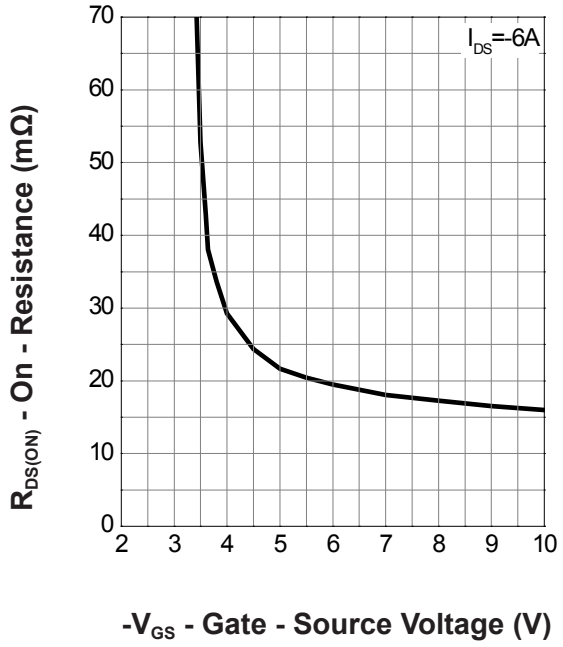



### Thermal Transient Impedance



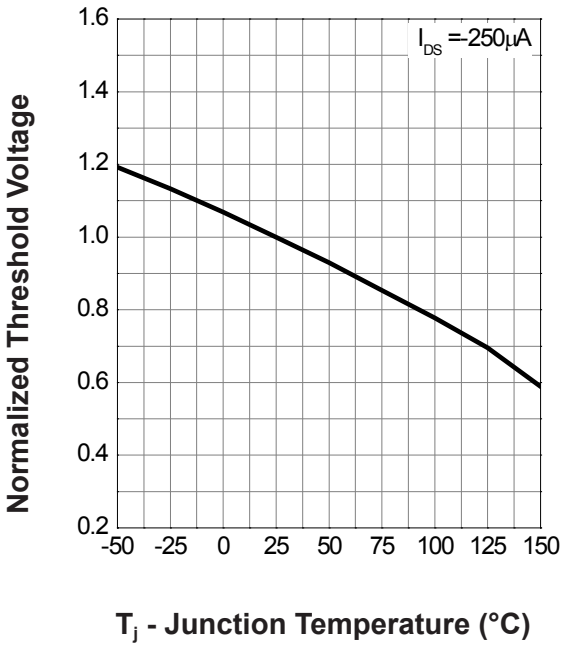
## Typical Operating Characteristics(Cont.)

**Gate-Source On Resistance**



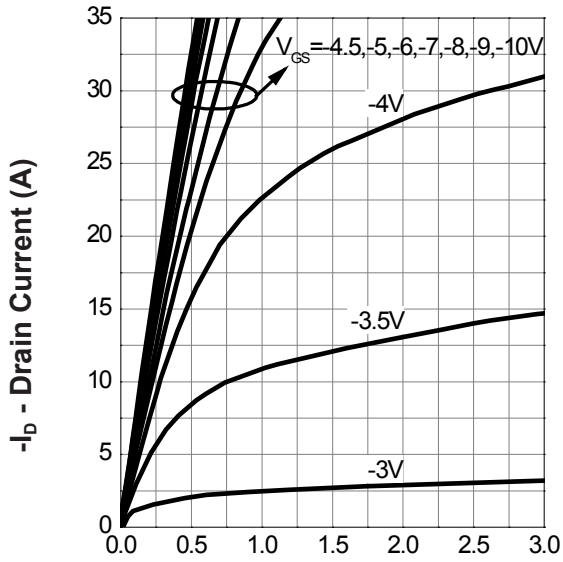

$-V_{GS}$ - Gate - Source Voltage (V)

**Gate Threshold Voltage**



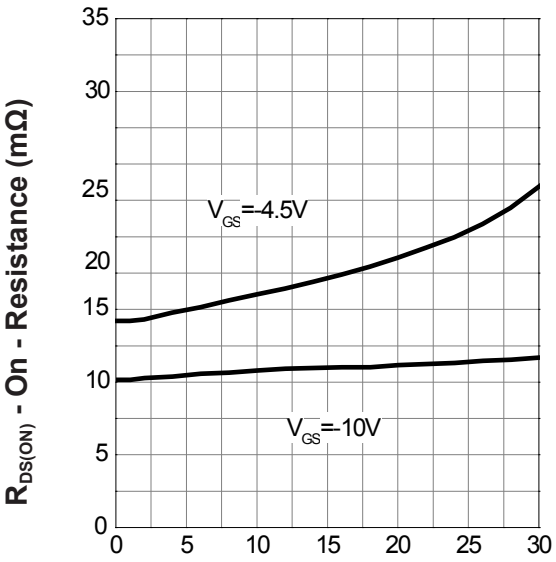

$T_j$ - Junction Temperature (°C)

**Output Characteristics**




$-V_{DS}$ - Drain - Source Voltage (V)

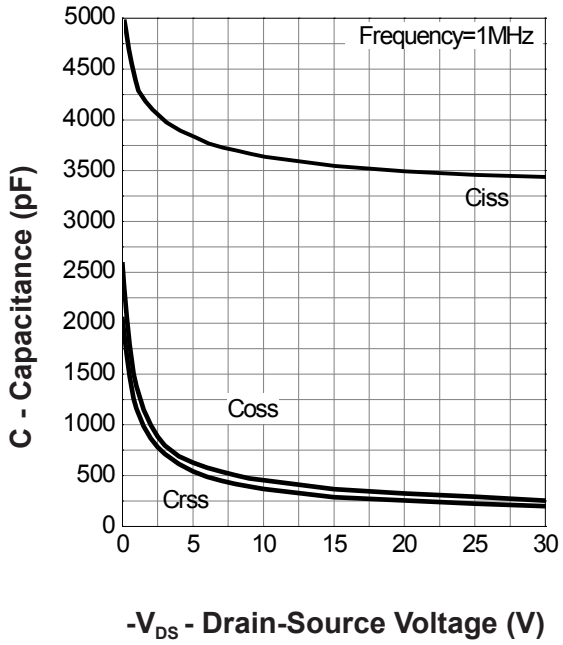
**Drain-Source On Resistance**




$-I_D$ - Drain Current (A)

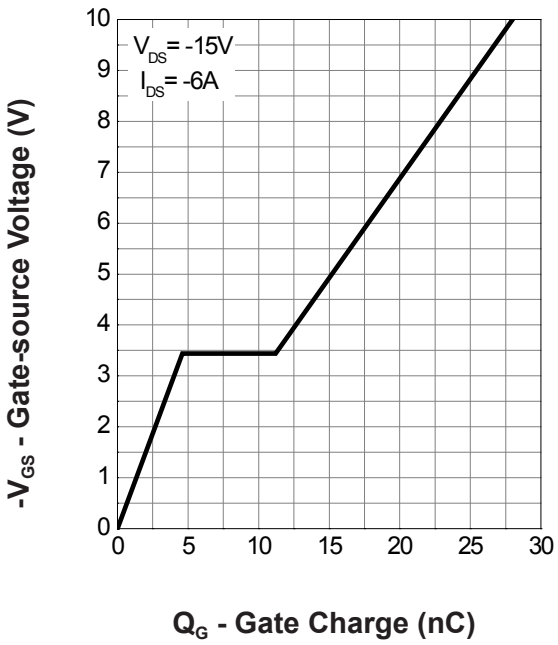
## Typical Operating Characteristics(Cont.)

**Capacitance**



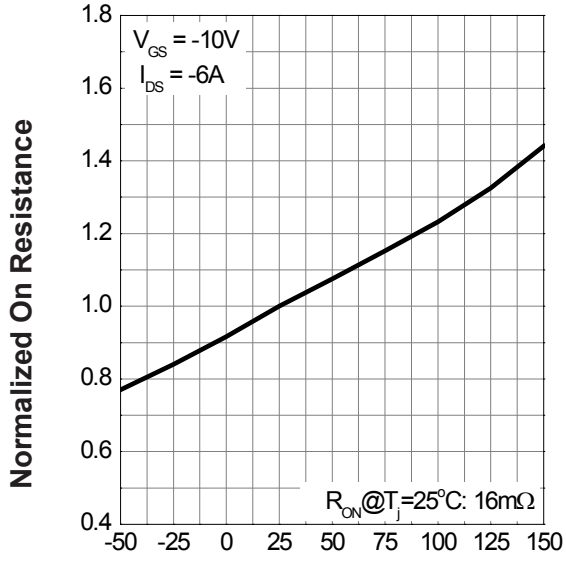

$-V_{DS}$ - Drain-Source Voltage (V)

**Gate Charge**



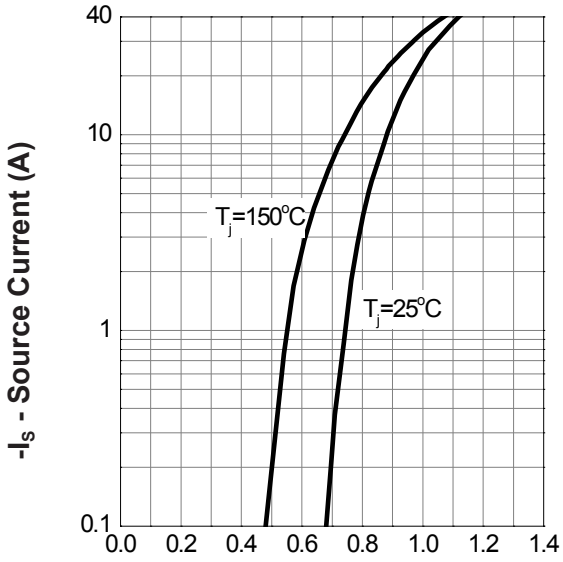

$Q_G$ - Gate Charge (nC)

**Drain-Source On Resistance**



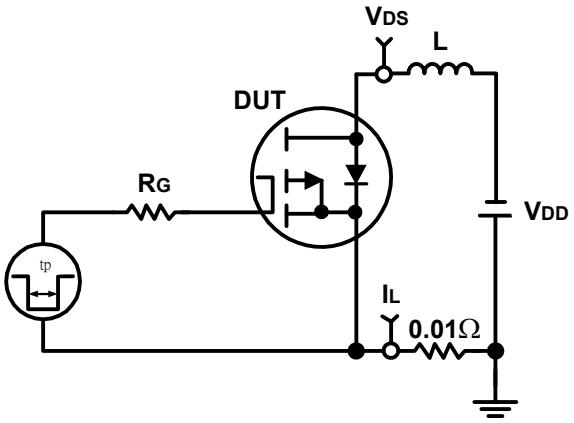

$T_j$ - Junction Temperature (°C)

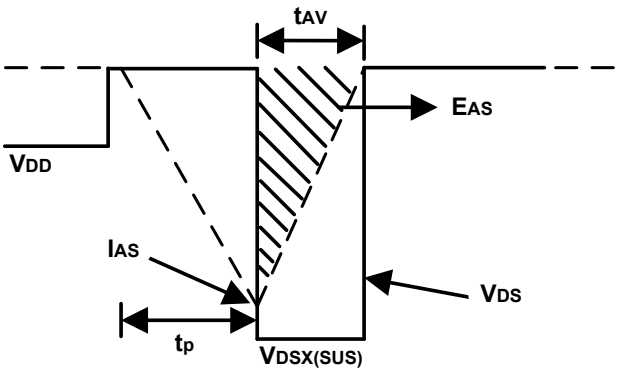
**Source-Drain Diode Forward**



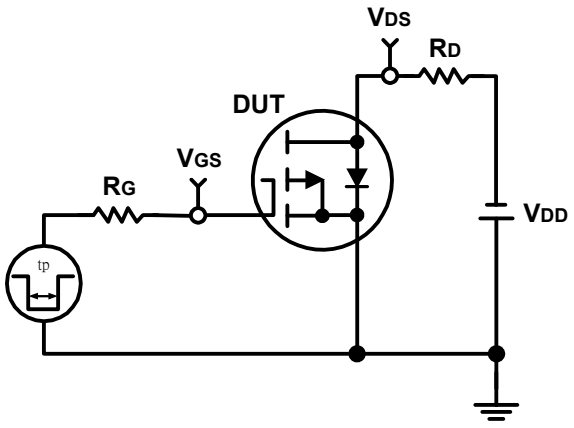

$-V_{SD}$ - Source - Drain Voltage (V)

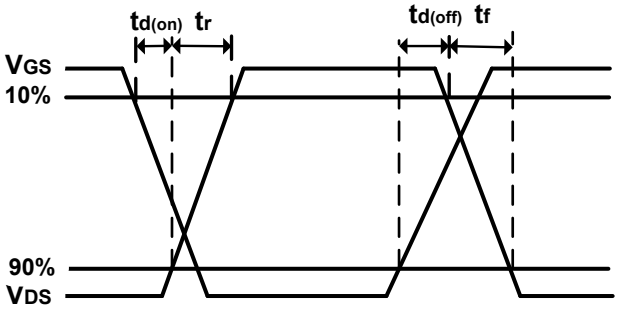
## Avalanche Test Circuit and Waveforms



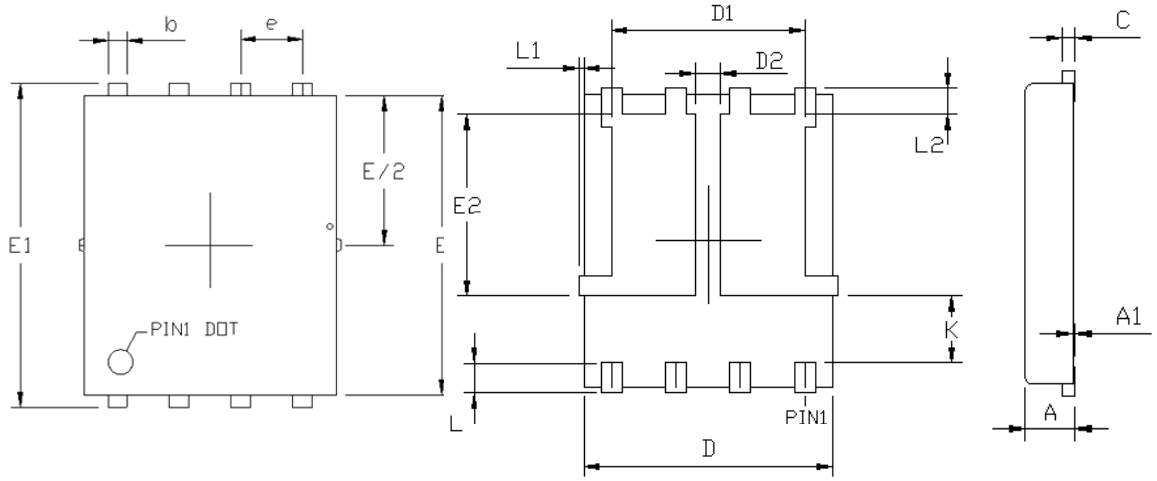

## Switching Time Test Circuit and Waveforms



## Package Information

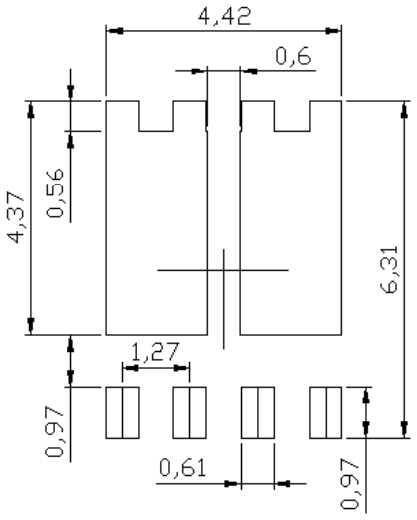
**PDFN5*6-8L**




**Top View** **Bottom View** **Side View**

| SYMBOLS | MILLIMETERS | | INCHES | |
|---|---|---|---|---|
| | MIN. | MAX. | MIN. | MAX. |
| A | 0.900 | 1.200 | 0.035 | 0.047 |
| A1 | 0.000 | 0.050 | 0.000 | 0.002 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.150 | 0.300 | 0.006 | 0.012 |
| D | 4.800 | 5.000 | 0.189 | 0.197 |
| D1 | 3.550 | 4.550 | 0.140 | 0.179 |
| D2 | 0.500 | 0.910 | 0.020 | 0.036 |
| E | 5.650 | 5.850 | 0.222 | 0.230 |
| E1 | 5.900 | 6.200 | 0.232 | 0.244 |
| E2 | 3.200 | 3.780 | 0.126 | 0.149 |
| e | 1.27 BSC | | 0.050 BSC | |
| K | 1.100 | - | 0.043 | - |
| L | 0.500 | 0.800 | 0.020 | 0.031 |
| L1 | 0.000 | 0.150 | 0.000 | 0.006 |
| L2 | 0.325 | 0.610 | 0.013 | 0.024 |

**RECOMMENDED LAND PATTERN**




UNIT: mm