## / Descriptions

## / Features

$V_{DS}$ (V) = -16V $I_D$ = -12A

$R_{DS(ON)}$@-4.5V ≤ 14mΩ(Type.12.6mΩ)

$R_{DS(ON)}$@-2.5V ≤ 25mΩ(Type.17.0mΩ)

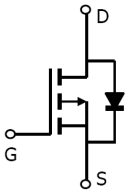
$R_{DS(ON)}$@-1.8V ≤ 100mΩ(Type.23.5mΩ)

HF Product.

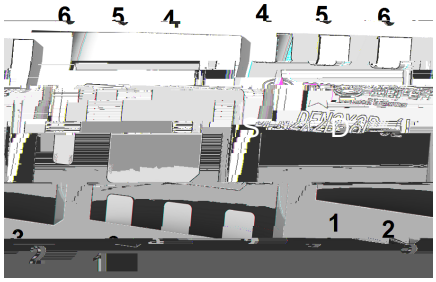
## / Applications

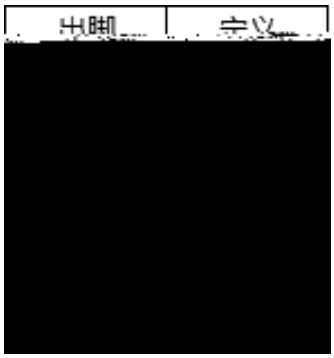
Power Management in Notebook computer, Portable Equipment and Battery powered systems.

## / Equivalent Circuit




## / Pinning



## / Marking

See Marking Instructions.

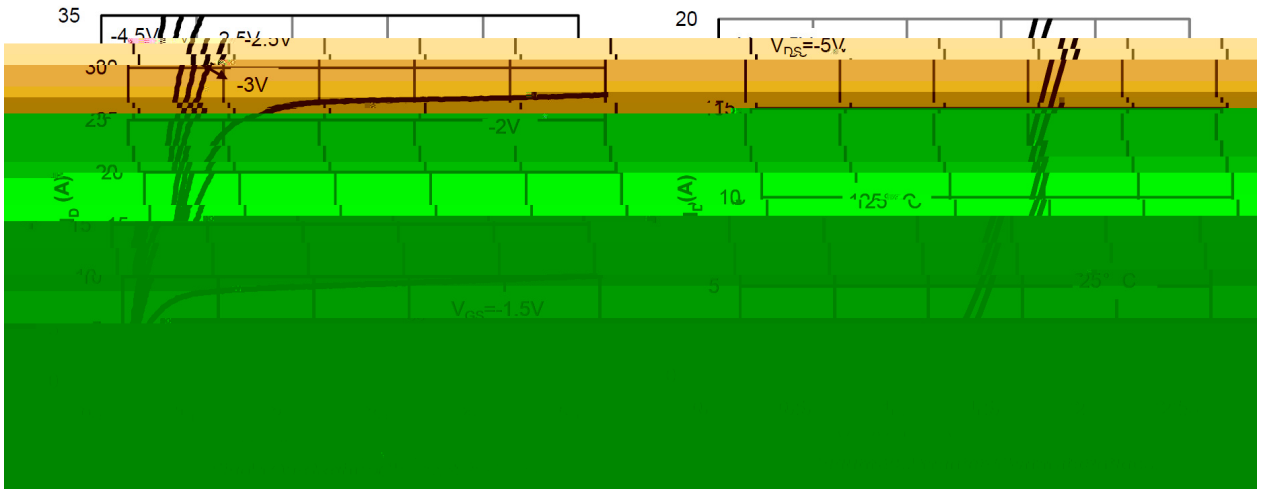
## / Absolute Maximum Ratings(Ta=25 )

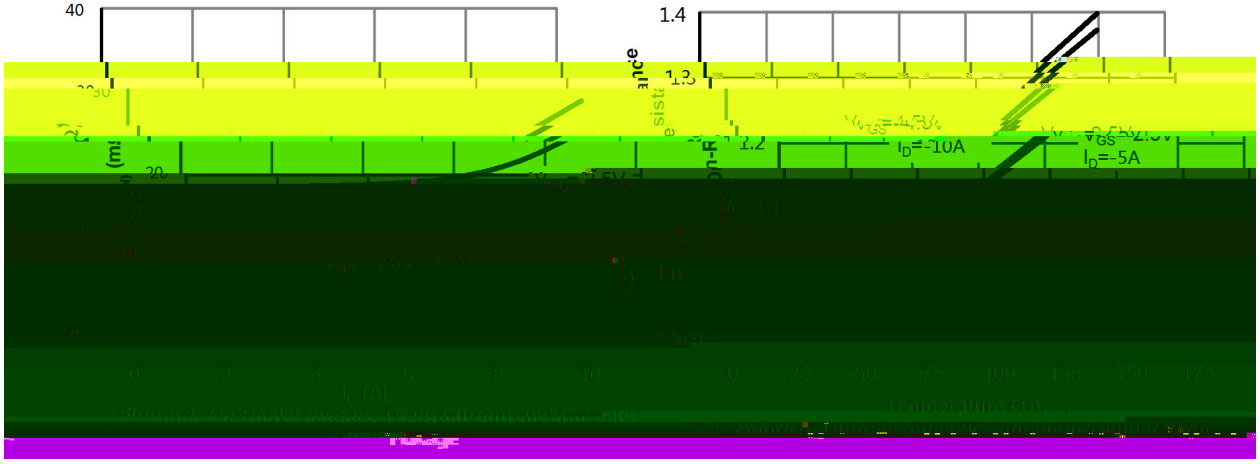
| Parameter | Symbol | Rating | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DSS}$ | -16 | V |
| Gate-Source Voltage | $V_{GSS}$ | ±10 | V |
| Continuous Drain Current | $I_D$ | -12 | A |
| Pulsed Drain Current | $I_{DM}$ | -42 | A |
| Power Dissipation for Single Operation | $P_D$ | 3.0 | W |
| Maximum Junction Temperature | $T_j$ | 150 | |
| Storage Temperature Range | $T_{stg}$ | -55 150 | |
| Thermal Resistance-Junction to Ambient | $R_{\theta JA}$ | 41.7 | /W |

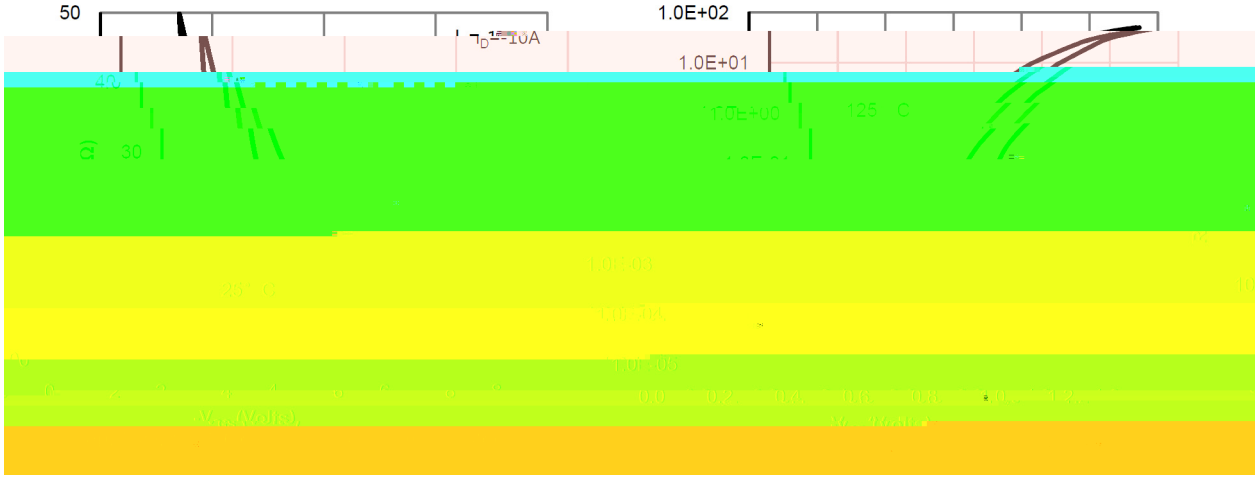
## / Electrical Characteristics(Ta=25 )

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | $I_D$=-250μA $V_{GS}$=0V | -16 | -19 | | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=-16V $V_{GS}$=0V | | | -1.0 | μA |
| Gate-Body leakage current | $I_{GSS}$ | $V_{DS}$=0V $V_{GS}$=±10V | | | ±100 | nA |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=VGS $I_D$=-250μA | -0.3 | -0.7 | -1.5 | V |
| Static Drain-Source On-Resistance | $R_{DS(ON)}$ | $V_{GS}$=-4.5V $I_D$=-10A | | 12.6 | 14 | m |
| | | $V_{GS}$=-2.5V $I_D$=-5A | | 17.0 | 25 | |
| | | $V_{GS}$=-1.8V $I_D$=-5A | | 23.5 | 100 | |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=-1A $V_{GS}$=0V | | | -1.2 | V |
| Gate resistance | Rg | $V_{GS}$=0V, $V_{DS}$=0V, f=1MHz | | 10.3 | | |
| Input Capacitance | $C_{iss}$ | $V_{GS}$=0V $V_{DS}$=-8V f=1MHz | | 1365 | | pF |
| Output Capacitance | $C_{oss}$ | | | 220 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 180 | | |
| Total Gate Charge | $Q_g$ | $V_{GS}$=-4.5V $V_{DS}$=-10V $I_D$=-8A | | 14.1 | | nC |
| Gate-Source Charge | $Q_{gs}$ | | | 1.3 | | |
| Gate-Drain Charge | $Q_{gd}$ | | | 3.1 | | |
| Turn-on Delay Time | $t_{d(ON)}$ | $V_{GS}$=-4.5V $V_{DS}$=-10V $I_D$=-8A $R_g$=3 | | 12.2 | | ns |
| Turn-on Rise Time | $t_r$ | | | 60.6 | | |
| Turn-off Delay Time | $t_{d(OFF)}$ | | | 68.6 | | |
| Turn-off Fall Time | $t_f$ | | | 41.7 | | |

## / Electrical Characteristic Curve



## / Electrical Characteristic Curve

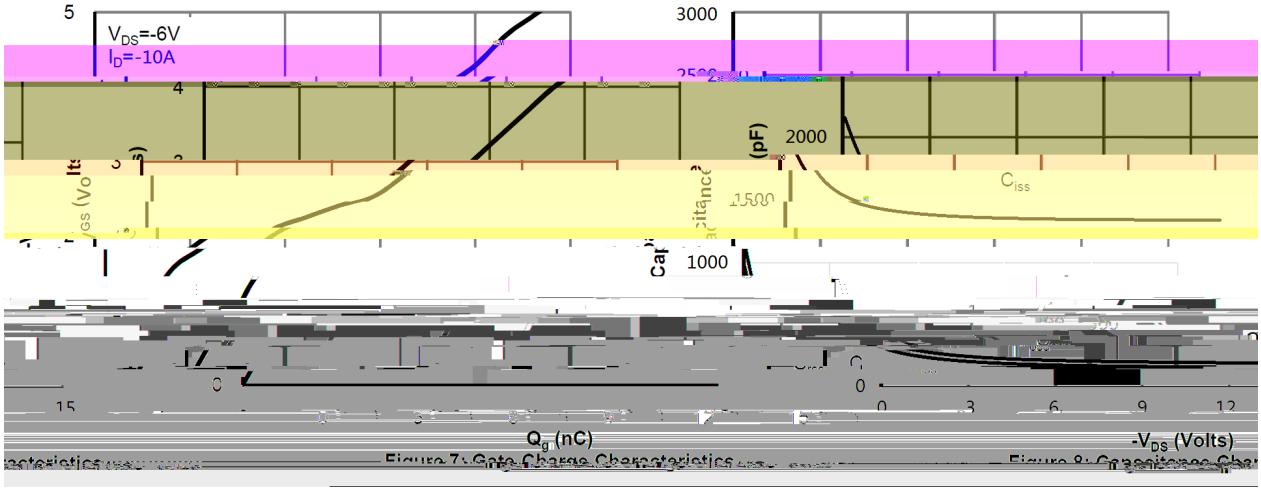



Figure 7: Gate Charge Characteristics

Figure 8: Capacitance Cha

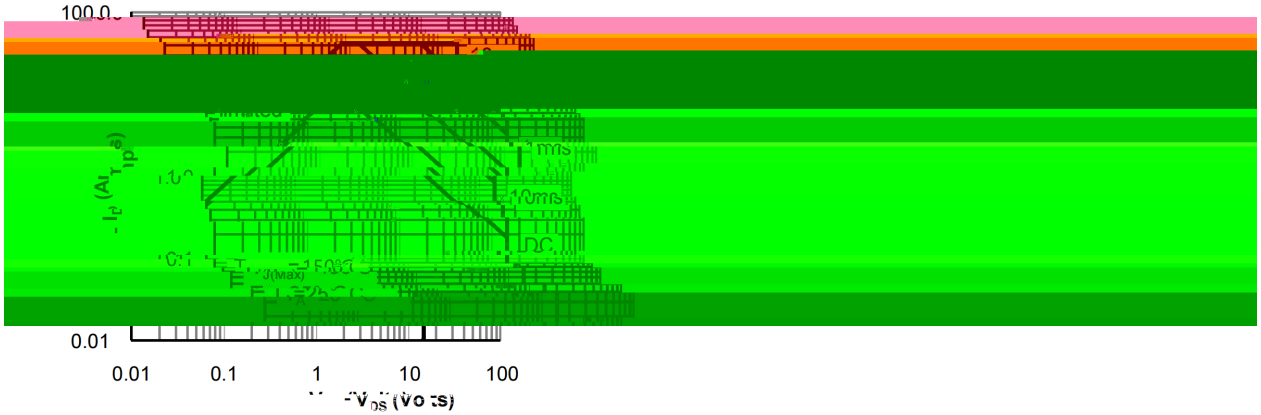



Figure 9: Maximum Forward Biased Safe

Operating Area

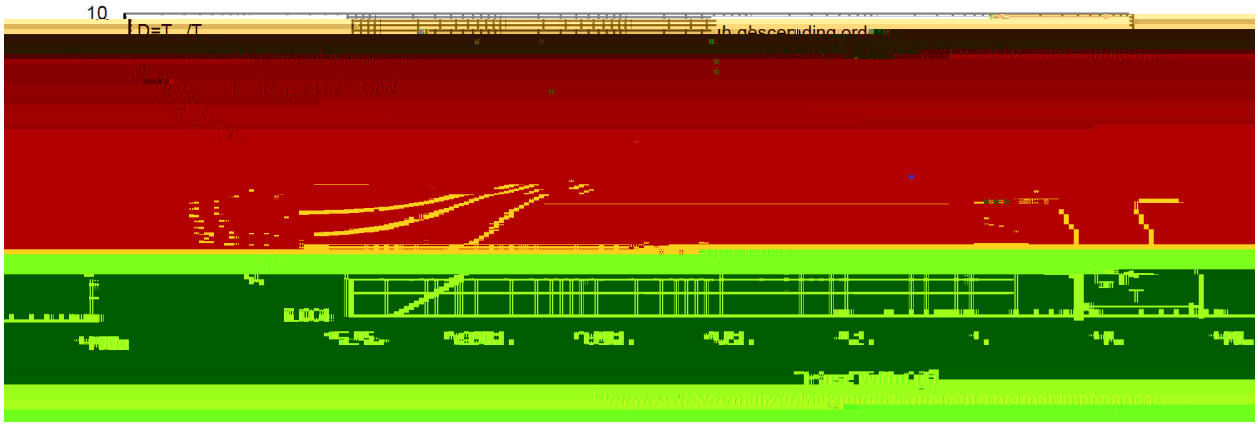
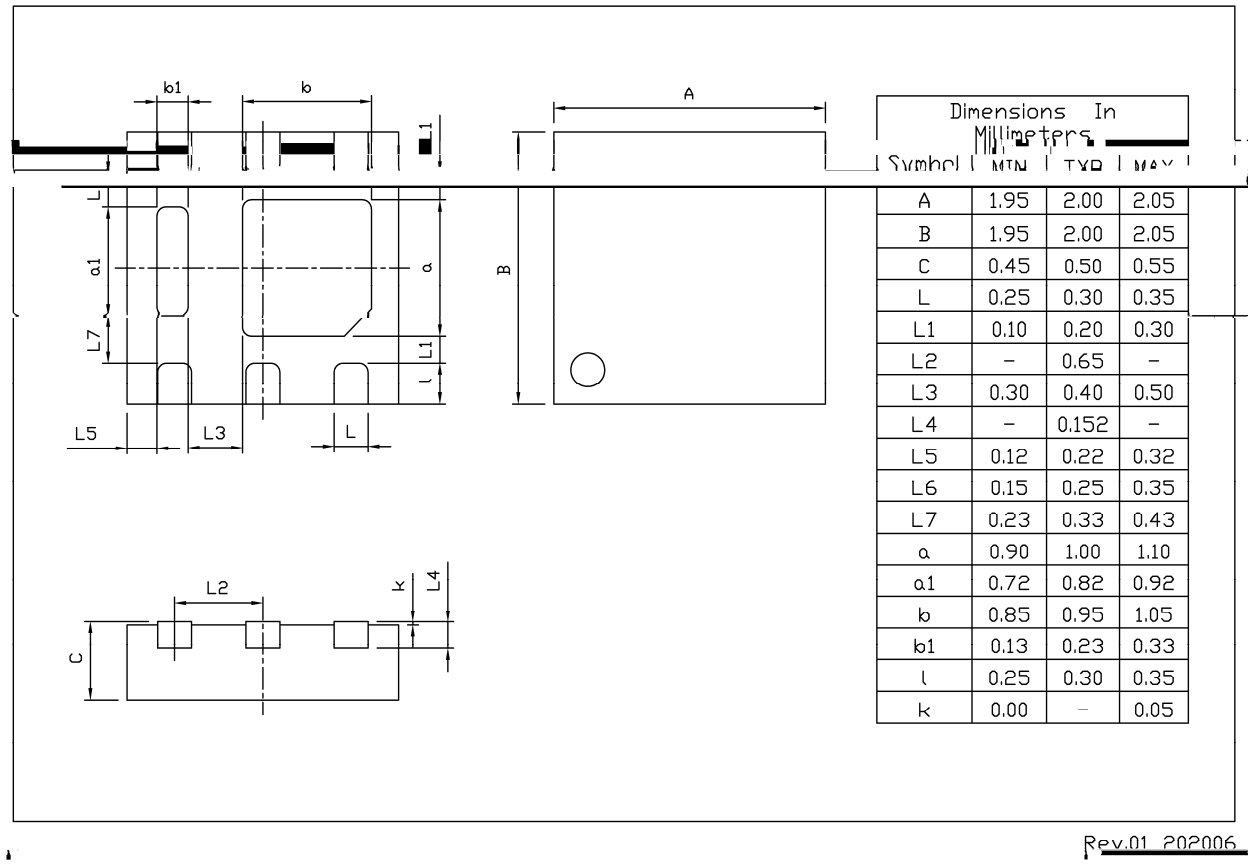



Figure 10: Maximum Effective Transient Thermal Impedance

## / Package Dimensions

DFN2×2B-6L-0.5 Unit:mm




| Dimensions In Millimeters | | | |
|---|---|---|---|
| Symbol | MIN | TYP | MAX |
| A | 1.95 | 2.00 | 2.05 |
| B | 1.95 | 2.00 | 2.05 |
| C | 0.45 | 0.50 | 0.55 |
| L | 0.25 | 0.30 | 0.35 |
| L1 | 0.10 | 0.20 | 0.30 |
| L2 | – | 0.65 | – |
| L3 | 0.30 | 0.40 | 0.50 |
| L4 | – | 0.152 | – |
| L5 | 0.12 | 0.22 | 0.32 |
| L6 | 0.15 | 0.25 | 0.35 |
| L7 | 0.23 | 0.33 | 0.43 |
| a | 0.90 | 1.00 | 1.10 |
| a1 | 0.72 | 0.82 | 0.92 |
| b | 0.85 | 0.95 | 1.05 |
| b1 | 0.13 | 0.23 | 0.33 |
| l | 0.25 | 0.30 | 0.35 |
| K | 0.00 | – | 0.05 |

Rev.01 202006

## / Marking Instructions




BR

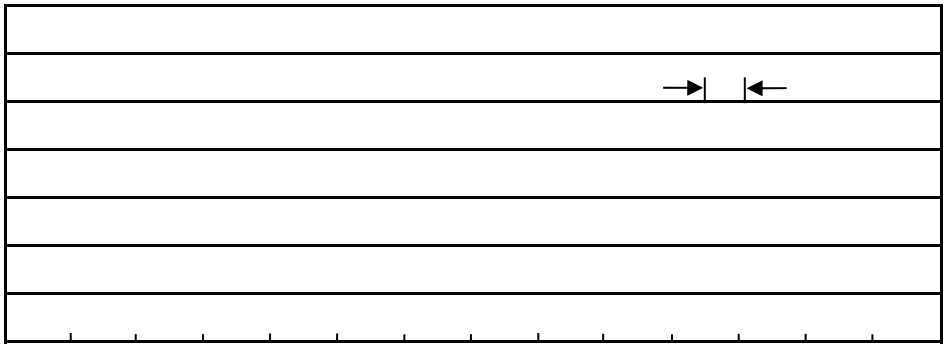
130P016

****

Note:

| | |
|---|---|
| BR: | Company Code |
| 130P016: | Product Type Code |
| ****: | Lot No. Code, code change with Lot No |

## ( ) / Temperature Profile for IR Reflow Soldering(Pb-Free)



| | | |
|---|---|---|
| | | Note: |
| 1 | 150 180 60 90sec; | 1.Preheating:150~180 , Time:60~90sec. |
| 2 | 245 5 5 0.5sec; | 2.Peak Temp.:245 5 , Duration:5 0.5sec. |
| 3 | 2 10 /sec. | 3. Cooling Speed: 2~10 /sec. |

## / Resistance to Soldering Heat Test Conditions

| | | | |
|---|---|---|---|
| 260 5 | 10 1 sec. | Temp.:260±5 | Time:10±1 sec |

## / Packaging SPEC.

/ REEL

| Package Type | Units | | | | | Dimension | | (unit mm³) |
|---|---|---|---|---|---|---|---|---|
| | Units/Reel / | Reels/Inner Box / | Units/Inner Box / | Inner Boxes/Outer Box / | Units/Outer Box / | Reel | Inner Box | Outer Box |
| DFN2×2B-6L | 4,000 | 10 | 40,000 | 4 | 160,000 | 7 ×8 | 210×205×205 | 445×435×230 |

## / Notices

All information provided in this document is subject to legal disclaimers.