

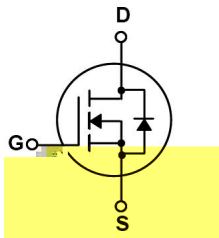
# IRF840

Rev.H Jul.-2018

TO-220      N      MOS      N-CHANNEL MOSFET in a TO-220 Plastic Package.

Low gate charge, low crss, fast switching.

These devices are well suited for high efficiency switching DC/DC converters and switch mode power supplies.



PIN1   G

PIN 2   D

PIN 3   S

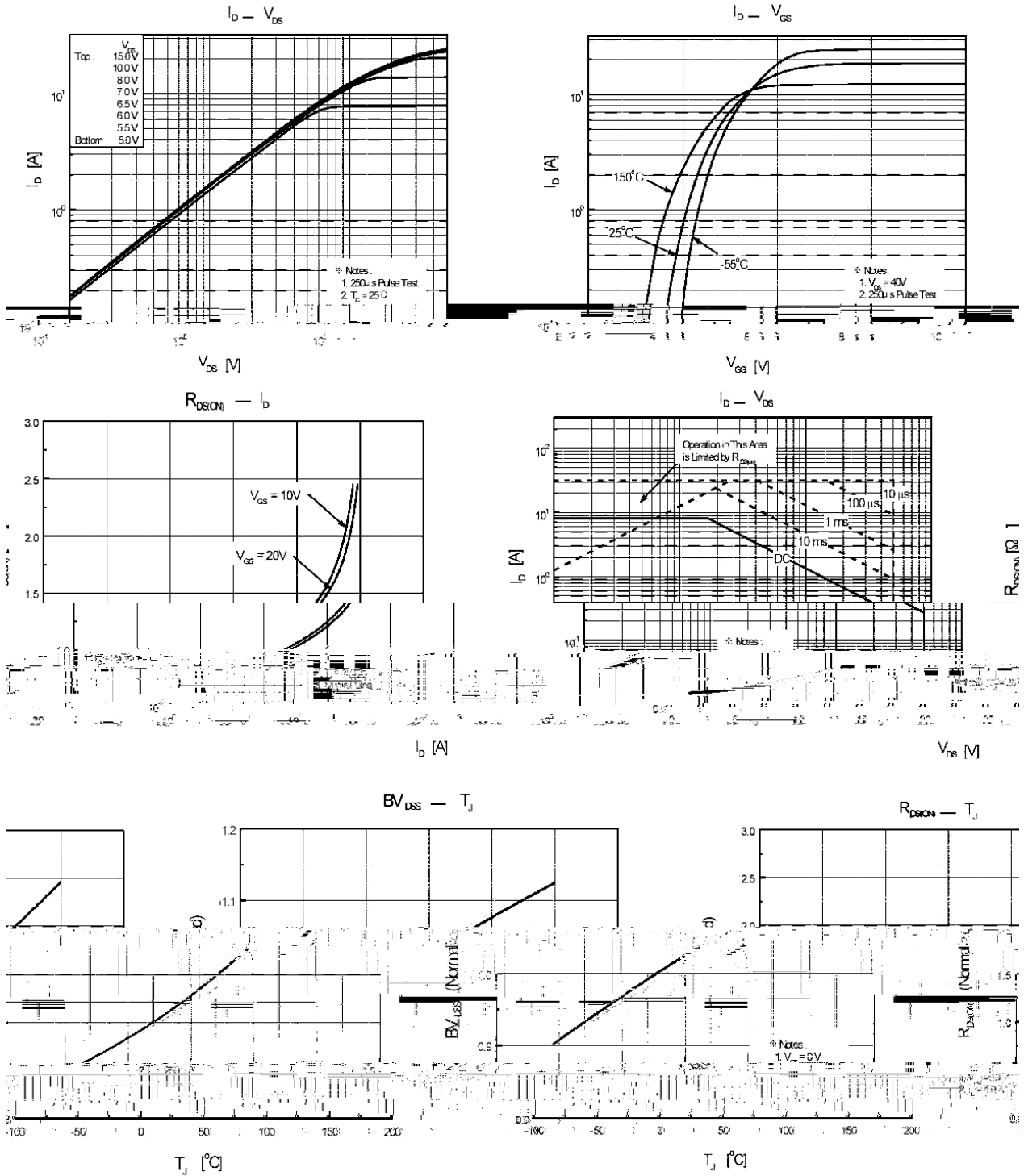
### / Absolute Maximum Ratings(Ta=25 )

| Parameter                              | Symbol                         | Rating     | Unit               |
|----------------------------------------|--------------------------------|------------|--------------------|
| Drain-Source Voltage                   | $V_{DS}$                       | 500        | V                  |
| Drain Current                          | $I_D(T_C=25^{\circ}\text{C})$  | 8.0        | A                  |
|                                        | $I_D(T_C=100^{\circ}\text{C})$ | 5.1        | A                  |
| Pulsed Drain Current                   | $I_{DM}$                       | 32         | A                  |
| Gate-Source Voltage                    | $V_{GS}$                       | $\pm 30$   | V                  |
| Avalanche Current                      | $I_{AR}$                       | 8          | A                  |
| Single Pulsed Avalanche Energy         | $E_{AS}$                       | 320        | mJ                 |
| Repetitive Avalanche Energy            | $E_{AR}$                       | 13.4       | mJ                 |
| Total Power Dissipation                | $P_D(T_C=25^{\circ}\text{C})$  | 134        | W                  |
| Junction and Storage Temperature Range | $T_J, T_{STG}$                 | -55 to 150 | $^{\circ}\text{C}$ |

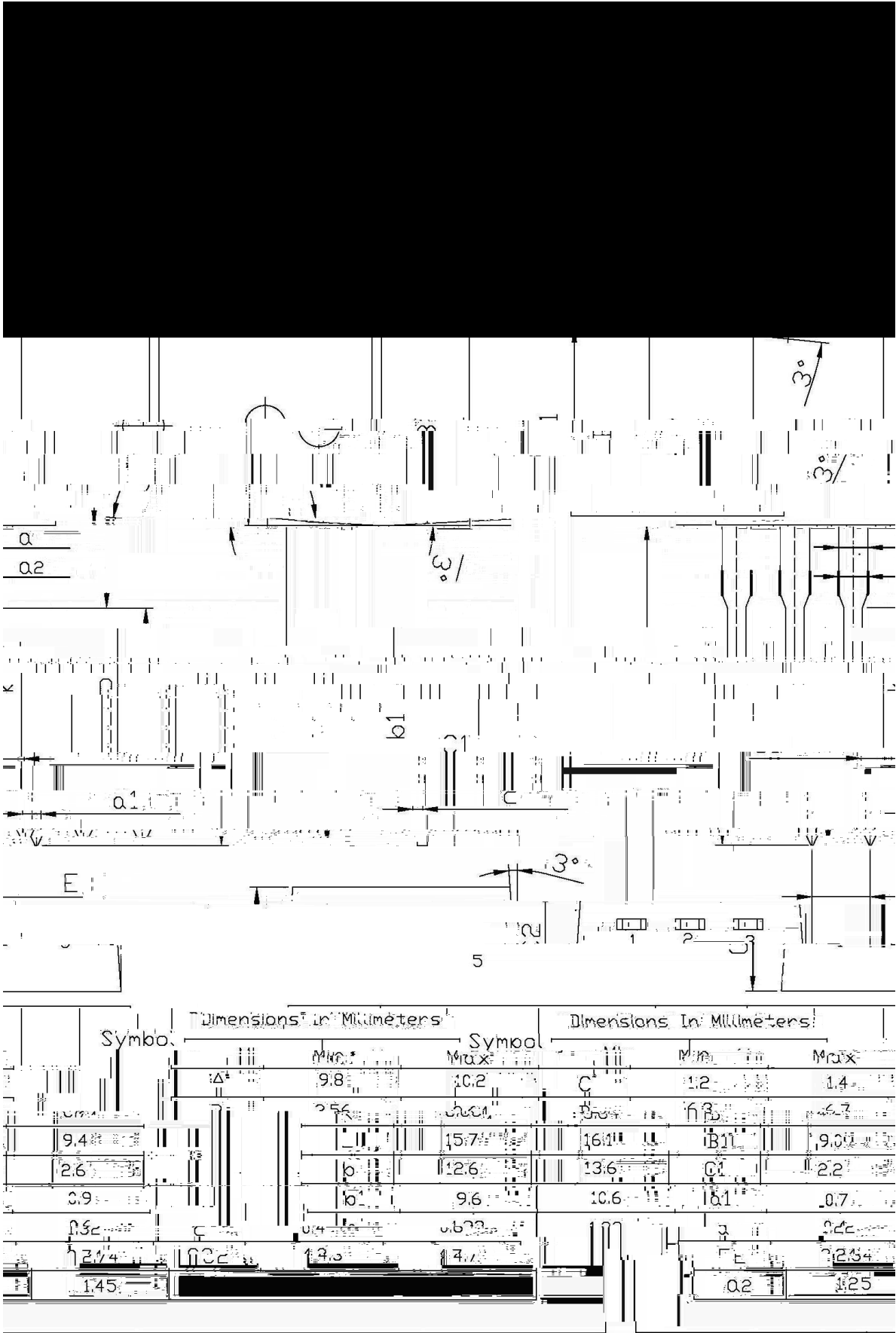
### / Electrical Characteristics(Ta=25 )

| Parameter                         | Symbol       | Test Conditions                          | Min | Typ  | Max       | Unit     |
|-----------------------------------|--------------|------------------------------------------|-----|------|-----------|----------|
| Zero Gate Voltage Drain Current   | $BV_{DSS}$   | $V_{GS}=0V$ $I_D=250\mu A$               | 500 |      |           | V        |
| Zero Gate Voltage Drain Current   | $I_{DSS}$    | $V_{DS}=500V$ $V_{GS}=0V$                |     |      | 10        | $\mu A$  |
|                                   |              | $V_{DS}=400V$ $T_C=125^{\circ}\text{C}$  |     |      | 100       | $\mu A$  |
| Gate-Body Leakage Current Forward | $I_{GSS}$    | $V_{GS}=\pm 30V$ $V_{DS}=0V$             |     |      | $\pm 0.1$ | $\mu A$  |
| Gate Threshold Voltage            | $V_{GS(th)}$ | $V_{DS}=V_{GS}$ $I_D=250\mu A$           | 2.0 |      | 4.0       | V        |
| Static Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}=10V$ $I_D=4.0A$                  |     | 0.70 | 0.85      | $\Omega$ |
| Forward Transconductance          | $g_{FS}$     | $V_{DS}=40V$ $I_D=4.0A$                  |     | 7.0  |           | S        |
| Forward On Voltage                | $V_{SD}$     | $V_{GS}=0V$ $I_S=8A$                     |     |      | 1.5       | V        |
| Input Capacitance                 | $C_{iss}$    | $V_{DS}=25V$ $V_{GS}=0V$<br>$f=1.0MHz$   |     | 1570 | 2040      | pF       |
| Output Capacitance                | $C_{oss}$    |                                          |     | 150  | 195       |          |
| Reverse Transfer Capacitance      | $C_{rss}$    |                                          |     | 15   | 20        |          |
| Turn-On Delay Time                | $t_{d(on)}$  | $V_{DD}=250V$ $I_D=8A$<br>$R_G=25\Omega$ |     | 25   | 60        | ns       |
| Turn-On Rise Time                 | $t_r$        |                                          |     | 75   | 160       |          |
| Turn-Off Delay Time               | $t_{d(off)}$ |                                          |     | 125  | 260       |          |
| Turn-Off Fall Time                | $t_f$        |                                          |     | 75   | 160       |          |

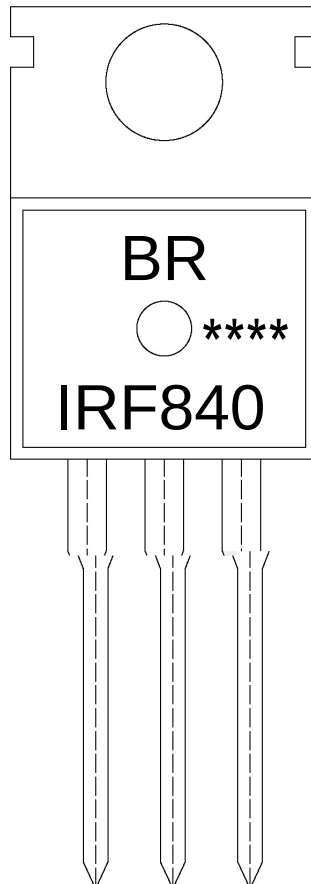
/ Electrical Characteristic Curve



/ Package Dimensions



**/ Marking Instructions**



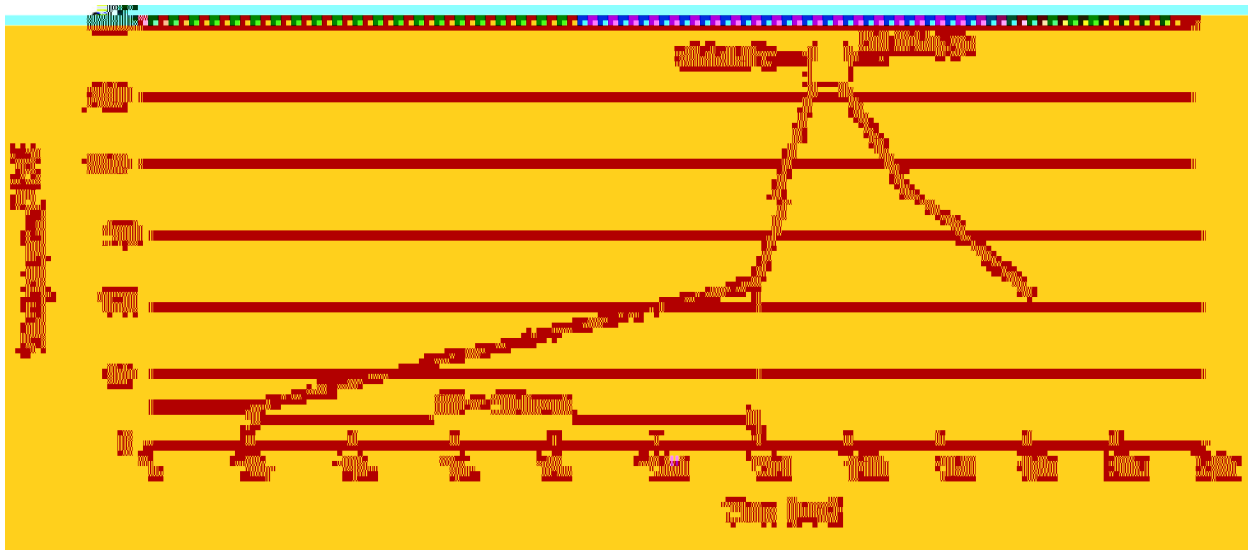
Note:

BR: Company Code

IRF840: Product Type.

\*\*\*\*: Lot No. Code, code change with Lot No.

( ) / Temperature Profile for Dip Soldering(Pb-Free)



Note:

- |   |     |     |    |         |                                         |
|---|-----|-----|----|---------|-----------------------------------------|
| 1 | 25  | 150 | 60 | 90sec;  | 1.Preheating:25~150 , Time:60~90sec.    |
| 2 | 255 | 5   | 5  | 0.5sec; | 2.Peak Temp.:255 5 , Duration:5 0.5sec. |
| 3 |     | 2   | 10 | /sec.   | 3. Cooling Speed: 2~10 /sec.            |

/ Resistance to Soldering Heat Test Conditions

270 5                      10 1 sec.                      Temp.:270±5℃                      Time:10±1 sec

/ Packaging SPEC.

/ BULK

| Package Type | Units          |                     |                      |                            |                      | Dimension (unit mm <sup>3</sup> ) |             |             |
|--------------|----------------|---------------------|----------------------|----------------------------|----------------------|-----------------------------------|-------------|-------------|
|              | Units/Bag<br>/ | Bags/Inner Box<br>/ | Units/Inner Box<br>/ | Inner Boxes/Outer Box<br>/ | Units/Outer Box<br>/ | Bag                               | Inner Box   | Outer Box   |
| TO-220/F     | 200            | 10                  | 2,000                | 5                          | 10,000               | 135×190                           | 237×172×102 | 560×245×195 |

/ TUBE

| Package Type | Units           |                      |                      |                            |                      | Dimension (unit mm <sup>3</sup> ) |            |             |
|--------------|-----------------|----------------------|----------------------|----------------------------|----------------------|-----------------------------------|------------|-------------|
|              | Units/Tube<br>/ | Tubes/Inner Box<br>/ | Units/Inner Box<br>/ | Inner Boxes/Outer Box<br>/ | Units/Outer Box<br>/ | Tube                              | Inner Box  | Outer Box   |
| TO-220/F     | 50              | 20                   | 1,000                | 5                          | 5,000                | 532×31.4×5.5                      | 555×164×50 | 575×290×180 |

/ Notices