

## General Description

The HSCC2734 is the low RDSON trench N-CH MOSFETs with robust ESD protection. This product is suitable for Lithium-ion battery pack applications. The HSCC2734 meet the RoHS and Green Product requirement with full function reliability approved.

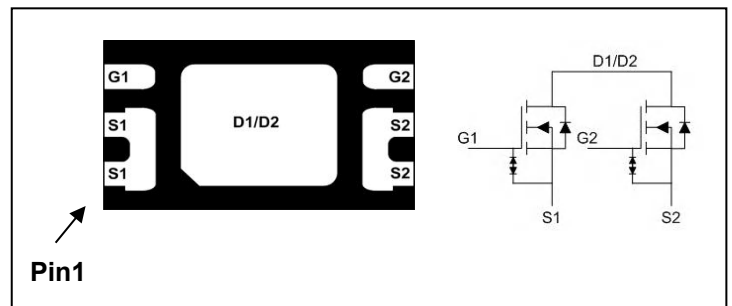
## Product Summary

|                  |    |    |
|------------------|----|----|
| $V_{DS}$         | 20 | V  |
| $R_{DS(ON),max}$ | 16 | mΩ |
| $I_D$            | 8  | A  |

## Features

- Low drain-source ON resistance
- Green Device Available
- ESD Protected Embedded

## DFN2x3 Pin Configuration



## Absolute Maximum Ratings

| Symbol                     | Parameter                                              | Rating     | Units            |
|----------------------------|--------------------------------------------------------|------------|------------------|
| $V_{DS}$                   | Drain-Source Voltage                                   | 20         | V                |
| $V_{GS}$                   | Gate-Source Voltage                                    | $\pm 12$   | V                |
| $I_D@T_A=25^\circ\text{C}$ | Continuous Drain Current, $V_{GS}$ @ 4.5V <sup>1</sup> | 8          | A                |
| $I_D@T_A=70^\circ\text{C}$ | Continuous Drain Current, $V_{GS}$ @ 4.5V <sup>1</sup> | 6.4        | A                |
| $I_{DM}$                   | Pulsed Drain Current <sup>2</sup>                      | 50         | A                |
| $P_D@T_A=25^\circ\text{C}$ | Total Power Dissipation <sup>1</sup>                   | 1.56       | W                |
| $T_{STG}$                  | Storage Temperature Range                              | -55 to 150 | $^\circ\text{C}$ |
| $T_J$                      | Operating Junction Temperature Range                   | -55 to 150 | $^\circ\text{C}$ |

## Thermal Data

| Symbol          | Parameter                                                         | Typ. | Max. | Unit               |
|-----------------|-------------------------------------------------------------------|------|------|--------------------|
| $R_{\theta JA}$ | Thermal Resistance Junction-Ambient <sup>1</sup> ( $t \leq 10s$ ) | ---  | 80   | $^\circ\text{C/W}$ |

**N-Channel Electrical Characteristics ( $T_J=25^\circ\text{C}$ , unless otherwise noted)**

| Symbol       | Parameter                                      | Conditions                                         | Min. | Typ. | Max.     | Unit      |
|--------------|------------------------------------------------|----------------------------------------------------|------|------|----------|-----------|
| $BV_{DSS}$   | Drain-Source Breakdown Voltage                 | $V_{GS}=0V, I_D=250\mu A$                          | 20   | ---  | ---      | V         |
| $R_{DS(ON)}$ | Static Drain-Source On-Resistance <sup>2</sup> | $V_{GS}=4.5V, I_D=2A$                              | 10   | 13   | 16       | $m\Omega$ |
|              |                                                | $V_{GS}=4.0V, I_D=2A$                              | 10.5 | 13.5 | 17       |           |
|              |                                                | $V_{GS}=3.7V, I_D=2A$                              | 11   | 14   | 18       |           |
|              |                                                | $V_{GS}=3.1V, I_D=2A$                              | 12.5 | 16   | 21       |           |
|              |                                                | $V_{GS}=2.5V, I_D=2A$                              | 16.5 | 20.5 | 27.5     |           |
| $V_{GS(th)}$ | Gate Threshold Voltage                         | $V_{GS}=V_{DS}, I_D=250\mu A$                      | 0.5  | 0.6  | 1.2      | V         |
| $I_{DSS}$    | Drain-Source Leakage Current                   | $V_{DS}=16V, V_{GS}=0V, T_J=25^\circ\text{C}$      | ---  | ---  | 1        | $\mu A$   |
|              |                                                | $V_{DS}=16V, V_{GS}=0V, T_J=55^\circ\text{C}$      | ---  | ---  | 5        |           |
| $I_{GSS}$    | Gate-Source Leakage Current                    | $V_{GS}=\pm 8V, V_{DS}=0V$                         | ---  | ---  | $\pm 10$ | $\mu A$   |
| $g_{fs}$     | Forward Transconductance                       | $V_{DS}=10V, I_D=4A$                               | ---  | 15   | ---      | S         |
| $Q_g$        | Total Gate Charge (4.5V)                       | $V_{DS}=15V, V_{GS}=4.5V, I_D=3A$                  | ---  | 10.6 | ---      | $nC$      |
| $Q_{gs}$     | Gate-Source Charge                             |                                                    | ---  | 2.2  | ---      |           |
| $Q_{gd}$     | Gate-Drain Charge                              |                                                    | ---  | 4.1  | ---      |           |
| $T_{d(on)}$  | Turn-On Delay Time                             | $V_{DD}=15V, V_{GS}=4.5V, R_G=6\Omega$<br>$I_D=3A$ | ---  | 7    | ---      | $ns$      |
| $T_r$        | Rise Time                                      |                                                    | ---  | 36   | ---      |           |
| $T_{d(off)}$ | Turn-Off Delay Time                            |                                                    | ---  | 46.5 | ---      |           |
| $T_f$        | Fall Time                                      |                                                    | ---  | 15   | ---      |           |
| $C_{iss}$    | Input Capacitance                              | $V_{DS}=10V, V_{GS}=0V, f=1MHz$                    | ---  | 735  | ---      | $pF$      |
| $C_{oss}$    | Output Capacitance                             |                                                    | ---  | 83   | ---      |           |
| $C_{rss}$    | Reverse Transfer Capacitance                   |                                                    | ---  | 81   | ---      |           |

**Diode Characteristics**

| Symbol   | Parameter                              | Conditions                                  | Min. | Typ. | Max. | Unit |
|----------|----------------------------------------|---------------------------------------------|------|------|------|------|
| $I_S$    | Continuous Source Current <sup>1</sup> | $V_G=V_D=0V$ , Force Current                | ---  | ---  | 8    | A    |
| $I_{SM}$ | Pulsed Source Current <sup>2</sup>     |                                             | ---  | ---  | 50   | A    |
| $V_{SD}$ | Diode Forward Voltage <sup>2</sup>     | $V_{GS}=0V, I_S=8.0A, T_J=25^\circ\text{C}$ | ---  | ---  | 1.2  | V    |

Note :

1.The data tested by surface mounted on a 1 inch<sup>2</sup>FR-4 board with 2OZ copper,  $t \leq 10s$ .

2.The data tested by pulsed , pulse width  $\leq 10\mu s$  , duty cycle  $\leq 1\%$

### Typical Characteristics

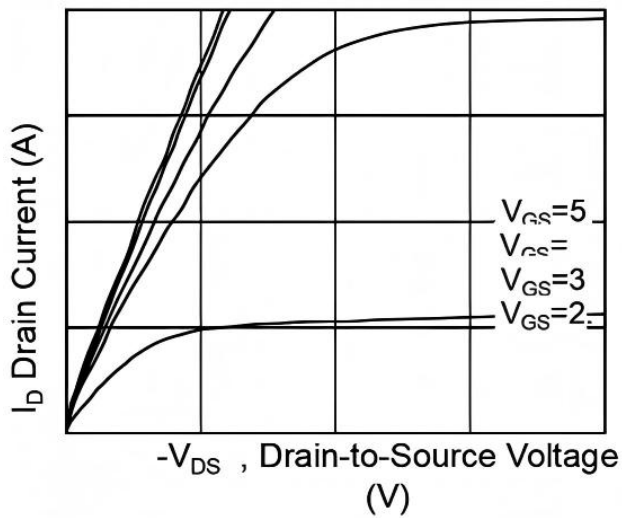


Fig.1 Typical Output Characteristics

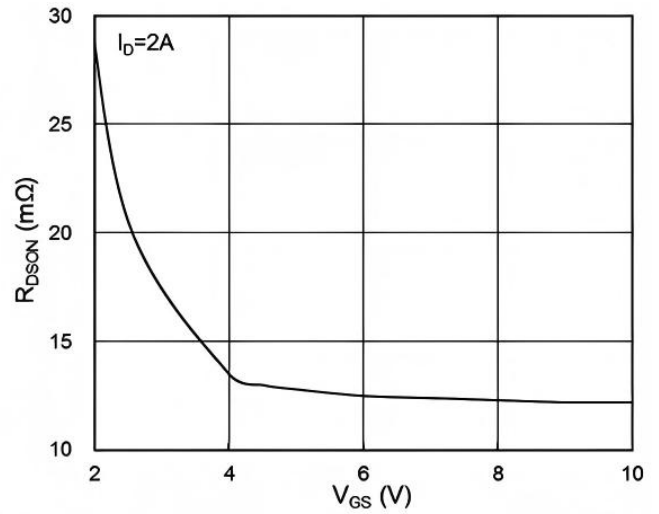


Fig.2 On-Resistance vs. G-S Voltage

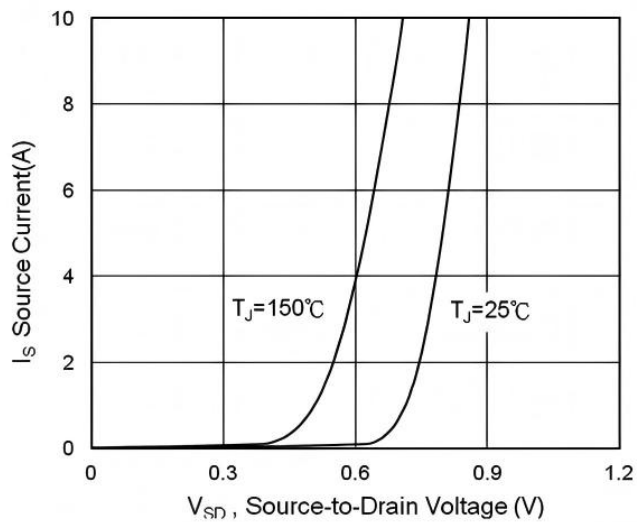


Fig.3 Forward Characteristics of Reverse diode

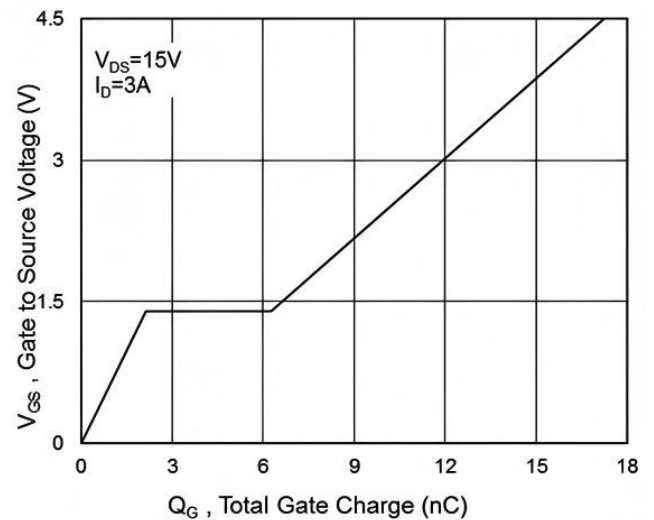


Fig.4 Gate-Charge Characteristics

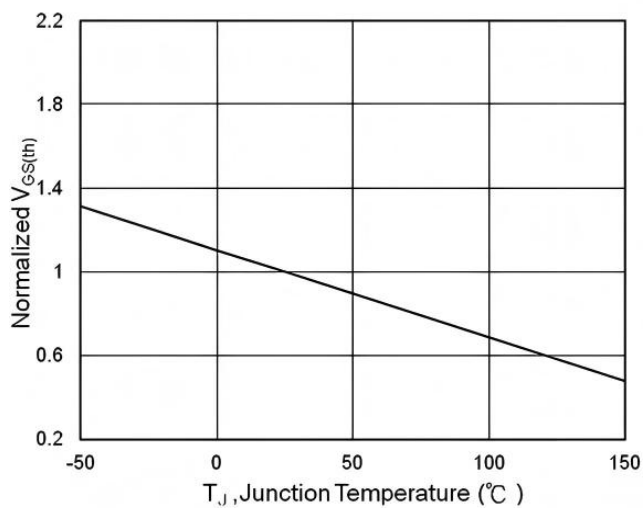


Fig.5  $V_{GS(th)}$  vs.  $T_J$

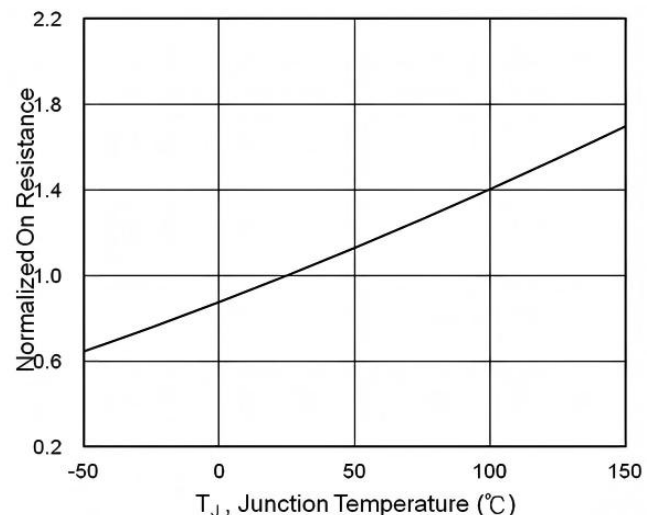
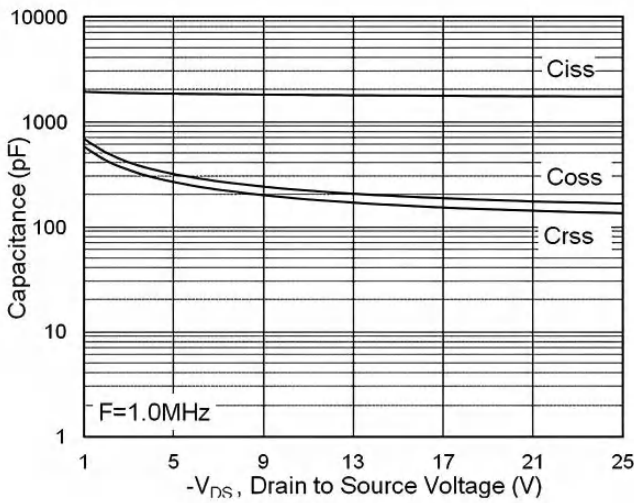
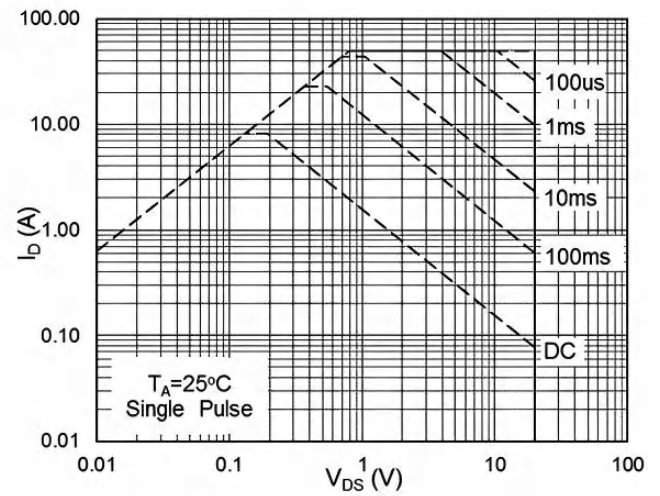


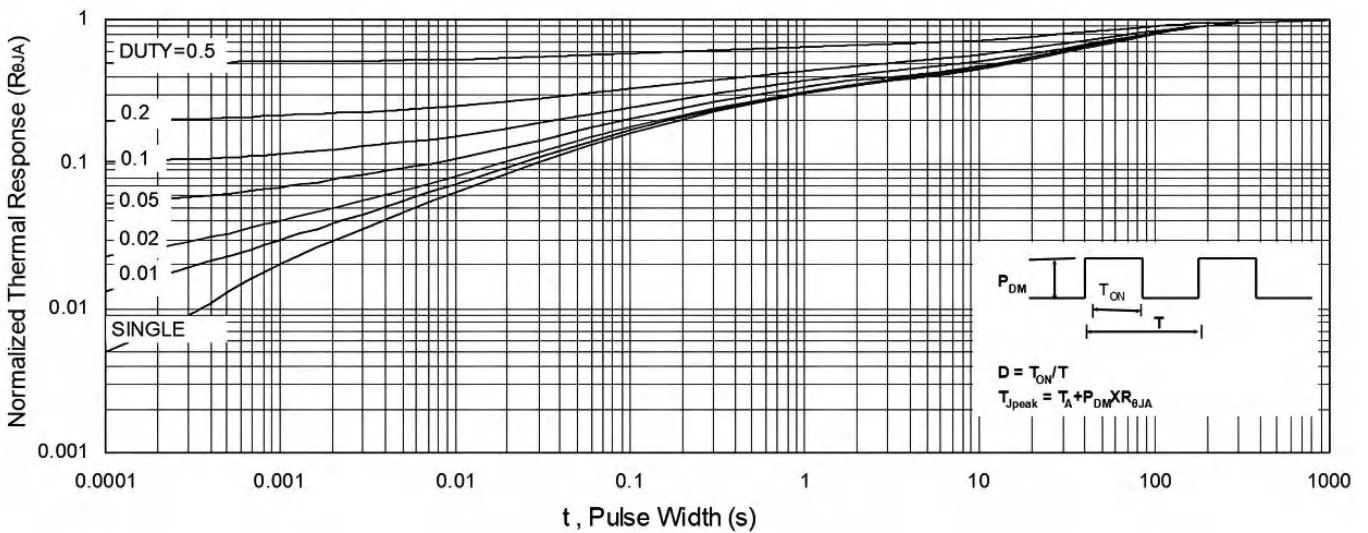
Fig.6 Normalized  $R_{DS(on)}$  vs.  $T_J$



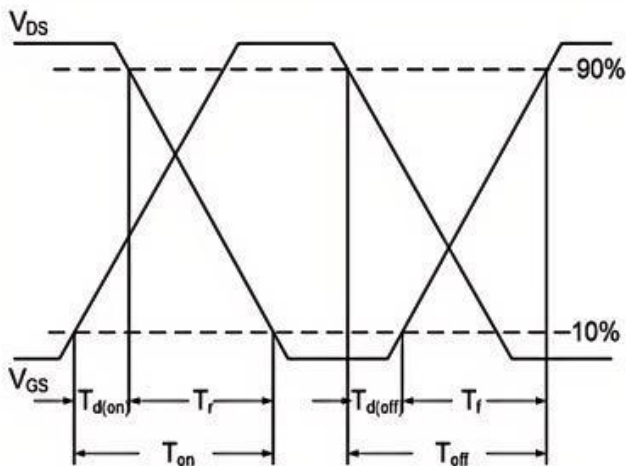
**Fig.7 Capacitance**



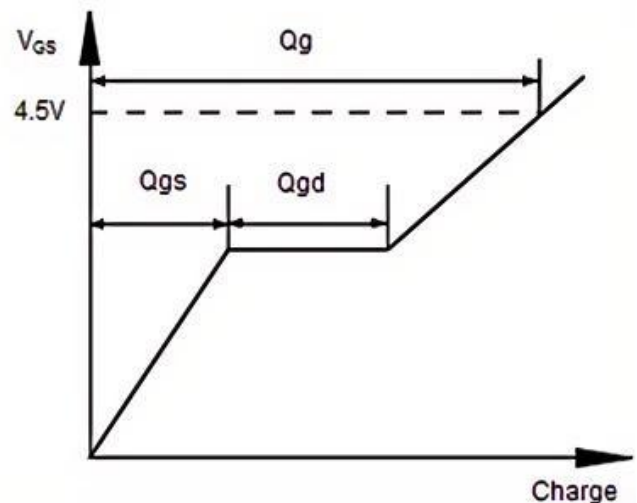
**Fig.8 Safe Operating Area**



**Fig.9 Normalized Maximum Transient Thermal Impedance**



**Fig.10 Switching Time Waveform**

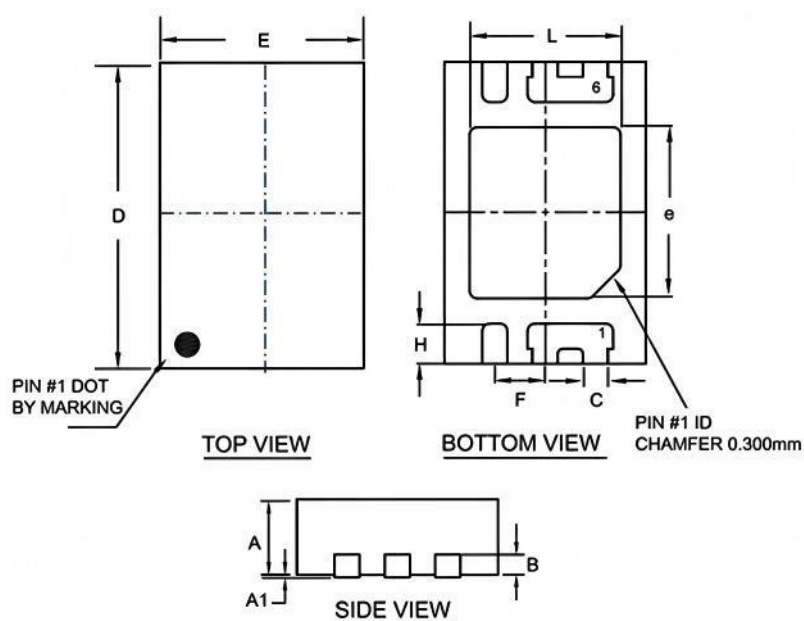


**Fig.11 Gate Charge Waveform**

## Ordering Information

| Part Number | Package code | Packaging      |
|-------------|--------------|----------------|
| HSCC2734    | DFN2*3       | 3000/Tape&Reel |

### DFN2\*3 Package Outline



| SYMBOLS | MILLIMETERS |       | INCHES   |       |
|---------|-------------|-------|----------|-------|
|         | MIN         | MAX   | MIN      | MAX   |
| A       | 0.700       | 0.800 | 0.028    | 0.031 |
| A1      | 0.000       | 0.050 | 0.000    | 0.002 |
| D       | 2.950       | 3.050 | 0.116    | 0.120 |
| E       | 1.950       | 2.050 | 0.077    | 0.081 |
| H       | 0.350       | 0.450 | 0.014    | 0.018 |
| L       | 1.450       | 1.550 | 0.057    | 0.061 |
| e       | 1.650       | 1.750 | 0.065    | 0.069 |
| B       | 0.195       | 0.211 | 0.008    | 0.008 |
| C       | 0.200       | 0.300 | 0.008    | 0.012 |
| F       | 0.500 BSC   |       | 0.02 BSC |       |

## HSCC2734 Marking:

