

## Field Effect Transistor

### KE3587-G (ME3587-G)

#### Features

N-channel: VDS=20V ID=4A

RDS(ON) < 0.045 @VGS=4.5V

RDS(ON) < 0.068 @VGS=2.5V

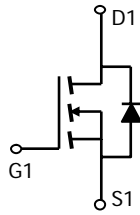
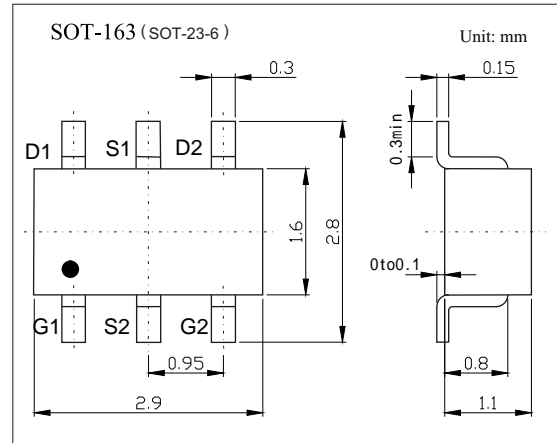
RDS(ON) < 0.12 @VGS=1.8V

P-channel: VDS=-20V ID=-2A

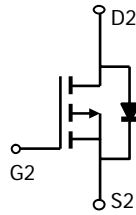
RDS(ON) < 0.11 @VGS=-4.5V

RDS(ON) < 0.13 @VGS=-2.5V

RDS(ON) < 0.17 @VGS=-1.8V



n-channel



p-channel

#### Absolute Maximum Ratings Ta = 25

| Parameter  | Symbol      | Max N-Channel | Max P-Channel | Unit |
|--|-------------|---------------|---------------|------|
| Drain-Source Voltage                             | VDS         | 20            | -20           | V    |
| Gate-Source Voltage                              | VGS         | ±8            |               |      |
| Drain-Current                                    | -Continuous | ID            | 4             | A    |
|  | -Pulsed     | IDM           | +15           |      |
| Power Dissipation                                | PD          | 1.15          |               | W    |
| Thermal Resistance, Junction- to-Ambient         | R JA        | 110           |               | /W   |
| Operating Junction and Storage Temperature Range | Tj, Tstg    | -55 to +150   |               |      |

## KE3587-G (ME3587-G)

## Electrical Characteristics Ta = 25

| Parameter                                  | Symbol   | Test conditions   |               | Min  | Typ   | Max   | Unit |      |   |
|--|----------|---|---------------|------|-------|-------|------|------|---|
| Drain-to-Source Breakdown Voltage          | V(BR)DSS | ID=+250uA,VGS=0   | N-Ch          | +20  |       |       | V    |      |   |
|  |          | ID=-250uA,VGS=0   | P-Ch          | -20  |       |       |      |      |   |
| Zero Gate Voltage Drain Current            | IDSS     | VDS=20V,VGS=0V  | N-Ch          |      |       | 1     | μA   |      |   |
|  |          | VDS=-20V,VGS=0V   | P-Ch          |      |       | -1    |      |      |   |
| Gate-Body Leakage                          | IGSS     | VGS=±10V,VDS=0V   | N-Ch          |      |       | ±100  | nA   |      |   |
|  |          | VGS=±10V,VDS=0V   | P-Ch          |      |       | ±100  |      |      |   |
| Gate Threshold Voltage (NOTE 1)            | VGS(th)  | VGS=VDS,ID=250uA  | N-Ch          | 0.5  | 0.75  | 1     | V    |      |   |
|  |          | VGS=VDS,ID=-250uA   | P-Ch          | -0.5 | -0.75 | -1    |      |      |   |
| Drain- Source on-state Resistance (NOTE 1) | RDS(ON)  | VGS=4.5V,ID=4A  | N-Ch          |      |       | 0.045 |      |      |   |
|  |          | VGS=-4.5V,ID=2.8A   | P-Ch          |      |       | 0.11  |      |      |   |
|  |          | VGS=2.5V,ID=3A  | N-Ch          |      |       | 0.068 |      |      |   |
|  |          | VGS=-2.5V,ID=2.4A   | P-Ch          |      |       | 0.13  |      |      |   |
|  |          | VGS=1.8V,ID=2A  | N-Ch          |      |       | 0.12  |      |      |   |
|  |          | VGS=-1.8V,ID=-1.7A  | P-Ch          |      |       | 0.17  |      |      |   |
| Forward Transconductance (NOTE 1)          | gFS      | VDS=5V,ID=4A  | N-Ch          | 5    |       |       | S    |      |   |
|  |          | VDS=-5V,ID=-2.3A  | P-Ch          | 4    |       |       |      |      |   |
| Total Gate Charge                          | Qg       | N-Channel<br>VDS = 10 V, VGS = 4.5 V, ID = 4 A<br>P-Channel<br>VDS = -6 V, VGS = -4.5 V, ID = -2.8 A  | N-Ch          |      | 11.2  | 14    | nC   |      |   |
| Gate-Source Charge                         | Qgs      |   | P-Ch          |      | 9     | 11    |      |      |   |
|  |          |   | N-Ch          |      | 1.4   |       |      |      |   |
| Gate-Drain Charge                          | Qgd      |   | P-Ch          |      | 2.3   |       |      |      |   |
|  |          |   | N-Ch          |      | 2.2   |       |      |      |   |
|  |          |   | P-Ch          |      | 2.0   |       |      |      |   |
| Input Capacitance                          | Ciss     | N-Channel<br>VDS = 10 V, VGS = 0 V, f = 1MHz<br>P-Channel<br>VDS = -10V, VGS = 0 V, f = 1MHz  | N-Ch          |      | 650   | 700   | PF   |      |   |
| Output Capacitance                         | Coss     |   | P-Ch          |      | 650   | 680   |      |      |   |
|  |          |   | N-Ch          |      | 175   |       |      |      |   |
| Reverse Transfer Capacitance               | Crss     |   | P-Ch          |      | 120   |       |      |      |   |
|  |          |   | N-Ch          |      | 85    |       |      |      |   |
|  |          |   | P-Ch          |      | 38    |       |      |      |   |
| Turn-On Delay Time                         | tD(on)   | N-Channel<br>VDS = 10 V, RL = 10 , ID = 1 A<br>VGS = 4.5 V, RG = 6<br>P-Channel<br>VDS = -6 V, RL = 3.6 , ID = -1 A<br>VGS = -4.5 V, RG = 6 | N-Ch          |      | 9     | 25    | ns   |      |   |
| Rise Time                                  | tr       |   | P-Ch          |      | 38    | 45    |      |      |   |
|  |          |   | N-Ch          |      | 17    | 60    |      |      |   |
| Turn-Off Delay Time                        | tD(off)  |   | P-Ch          |      | 25    | 30    |      |      |   |
|  |          |   | N-Ch          |      | 46    | 70    |      |      |   |
| Fall Time                                  | tf       |   | P-Ch          |      | 43    | 50    |      |      |   |
|  |          |   | N-Ch          |      | 2.7   | 20    |      |      |   |
| Diode Forward Voltage                      | VSD      |   | VGS=0V,IS=1A  | N-Ch |       | 0.8   |      | 1.0  | V |
|  |          |   | VGS=0V,IS=-1A | P-Ch |       | -0.85 |      | -1.0 |   |