# SFT1345

# Power MOSFET
# –100V, 275mΩ, –11A, Single P-Channel

ON Semiconductor®

www.onsemi.com

This P-Channel Power MOSFET is produced using ON Semiconductor's trench technology, which is specifically designed to minimize gate charge and low on resistance. This device is suitable for applications with low gate charge driving or low on resistance requirements.

### Features

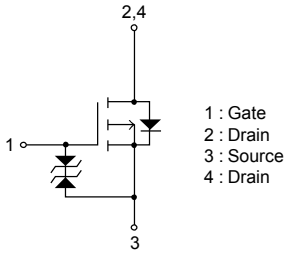
- Low On-Resistance
- 4V drive
- 100% Avalanche Tested
- ESD Diode-Protected Gate
- Pb-Free, Halogen Free and RoHS compliance

### Typical Applications

- Reverse Battery Protection
- Load Switch

| $V_{DSS}$ | $R_{DS(on)}$ Max | $I_D$ Max |
|---|---|---|
| –100V | 275mΩ@ –10V | –11A |
| | 315mΩ@ –4.5V | |
| | 330mΩ@ –4V | |

### ELECTRICAL CONNECTION
### P-Channel




### SPECIFICATIONS

**ABSOLUTE MAXIMUM RATING** at Ta = 25°C (Note 1, 2)

| Parameter | | Symbol | Value | Unit |
|---|---|---|---|---|
| Drain to Source Voltage | | $V_{DSS}$ | –100 | V |
| Gate to Source Voltage | | $V_{GSS}$ | ±20 | V |
| Drain Current (DC) | | $I_D$ | –11 | A |
| Drain Current<br>PW ≤ 10μs, duty cycle ≤ 1% | | $I_{DP}$ | –44 | A |
| Power Dissipation | | $P_D$ | 1.0 | W |
| | Tc=25°C | | 35 | W |
| Junction Temperature | | Tj | 150 | °C |
| Storage Temperature | | Tstg | –55 to +150 | °C |

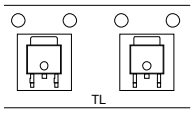
Note 1 : Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### THERMAL RESISTANCE RATINGS

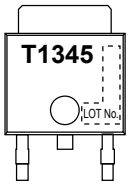
| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Junction to Case Steady State | $R_{\theta JC}$ | 3.57 | °C/W |
| Junction to Ambient (Note 2) | $R_{\theta JA}$ | 125 | |

Note 2 : Insertion mounted

### PACKING TYPE : TL

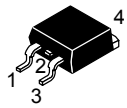



### MARKING





IPAK(TP)




DPAK(TP-FA)

### ORDERING INFORMATION

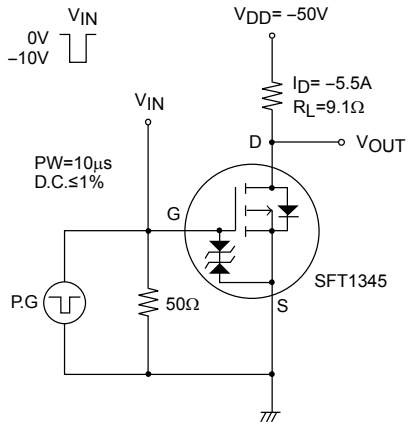
See detailed ordering and shipping information on page 6 of this data sheet.

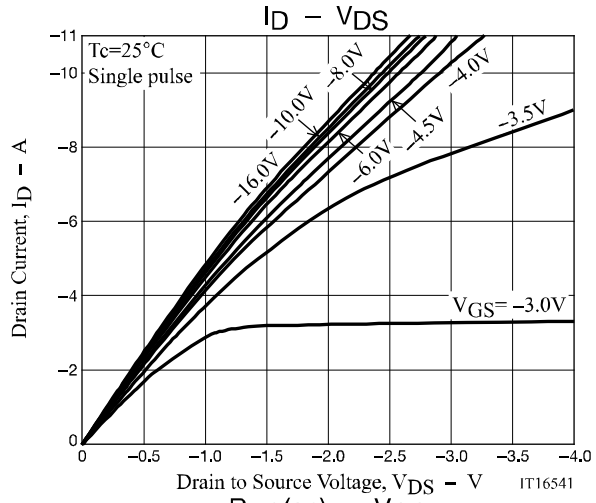
**ELECTRICAL CHARACTERISTICS** at Ta = 25°C (Note 3)

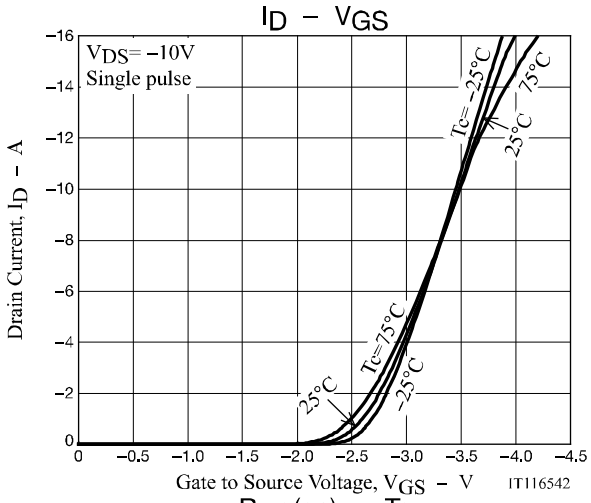
| Parameter | Symbol | Conditions | Value | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Drain to Source Breakdown Voltage | $V_{(BR)DSS}$ | $I_D$=−1mA, $V_{GS}$=0V | −100 | | | V |
| Zero-Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=−100V, $V_{GS}$=0V | | | −1 | μA |
| Gate to Source Leakage Current | $I_{GSS}$ | $V_{GS}$=±16V, $V_{DS}$=0V | | | ±10 | μA |
| Gate Threshold Voltage | $V_{GS}(th)$ | $V_{DS}$=−10V, $I_D$=−1mA | −1.2 | | −2.6 | V |
| Forward Transconductance | $g_{FS}$ | $V_{DS}$=−10V, $I_D$=−5.5A | | 8.5 | | S |
| Static Drain to Source On-State Resistance | $R_{DS}(on)1$ | $I_D$=−5.5A, $V_{GS}$=−10V | | 210 | 275 | mΩ |
| | $R_{DS}(on)2$ | $I_D$=−3A, $V_{GS}$=−4.5V | | 225 | 315 | mΩ |
| | $R_{DS}(on)3$ | $I_D$=−3A, $V_{GS}$=−4V | | 235 | 330 | mΩ |
| Input Capacitance | Ciss | $V_{DS}$=−20V, f=1MHz | | 1020 | | pF |
| Output Capacitance | Coss | | | 72 | | pF |
| Reverse Transfer Capacitance | Crss | | | 43 | | pF |
| Turn-ON Delay Time | $t_d(on)$ | See specified Test Circuit | | 9.5 | | ns |
| Rise Time | $t_r$ | | | 25 | | ns |
| Turn-OFF Delay Time | $t_d(off)$ | | | 105 | | ns |
| Fall Time | $t_f$ | | | 55 | | ns |
| Total Gate Charge | Qg | $V_{DS}$=−50V, $V_{GS}$=−10V, $I_D$=−11A | | 21 | | nC |
| Gate to Source Charge | Qgs | | | 3.6 | | nC |
| Gate to Drain “Miller” Charge | Qgd | | | 4.5 | | nC |
| Forward Diode Voltage | $V_{SD}$ | $I_S$=−11A, $V_{GS}$=0V | | −0.93 | −1.5 | V |

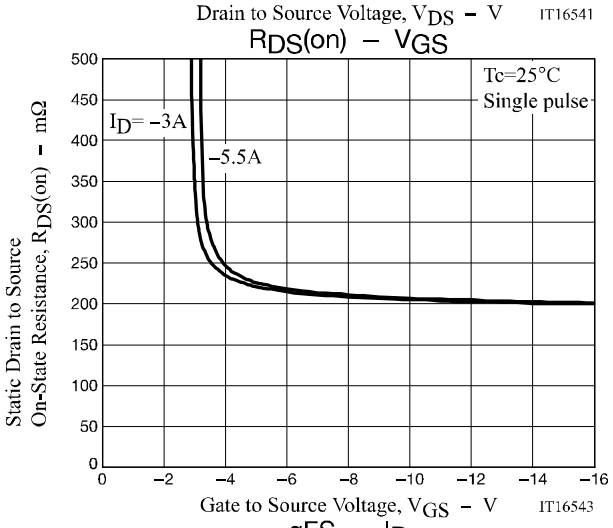
Note 3 : Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

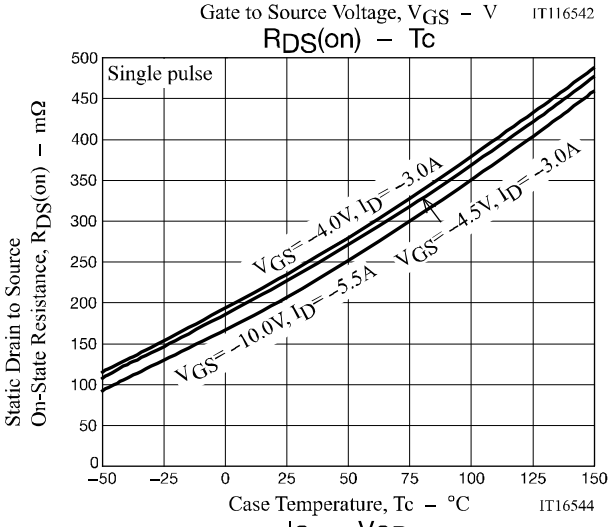
**Switching Time Test Circuit**

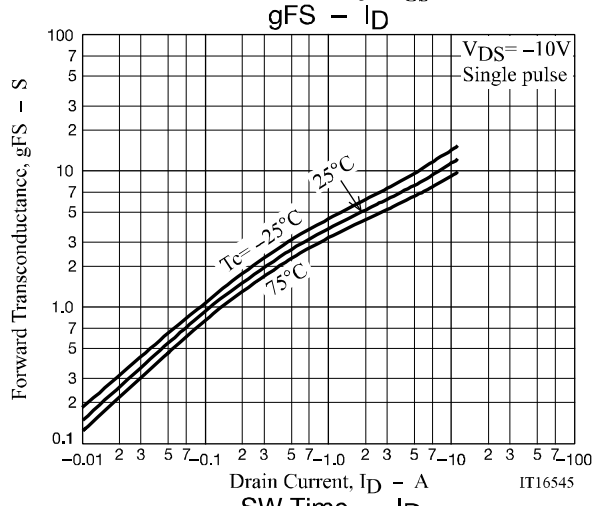


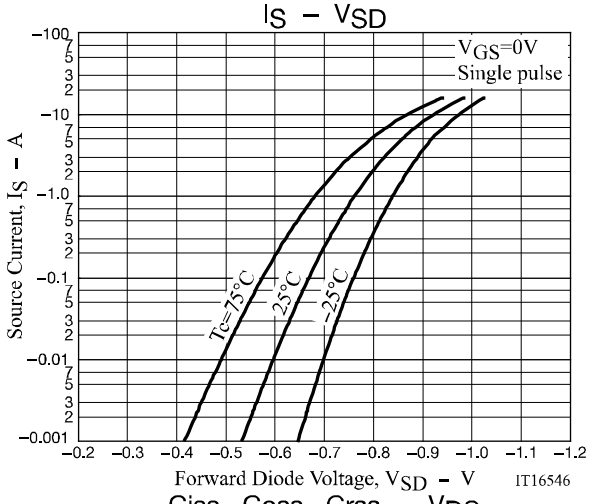

ID – VDS
Tc=25°C
Single pulse
–8.0V
–10.0V
–4.0V
–16.0V
–6.0V
–4.5V
–3.5V
VGS= –3.0V
Drain Current, ID – A
Drain to Source Voltage, VDS – V
IT16541

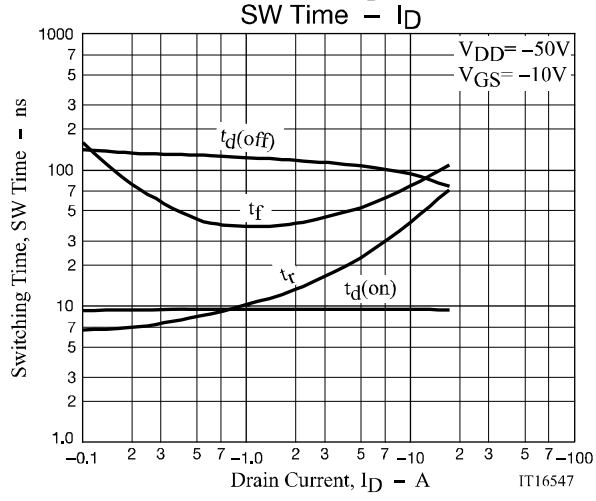

ID – VGS
VDS= –10V
Single pulse
Tc= –25°C
75°C
25°C
Tc=75°C
25°C
–25°C
Drain Current, ID – A
Gate to Source Voltage, VGS – V
IT16542

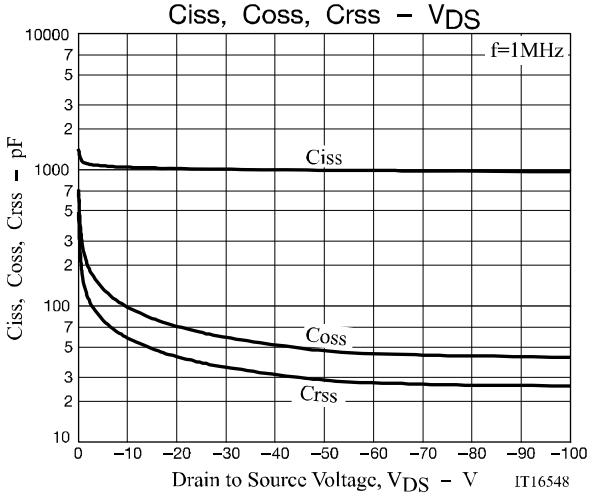

RDS(on) – VGS
Tc=25°C
Single pulse
ID= –3A
–5.5A
Static Drain to Source
On-State Resistance, RDS(on) – mΩ
Gate to Source Voltage, VGS – V
IT16543

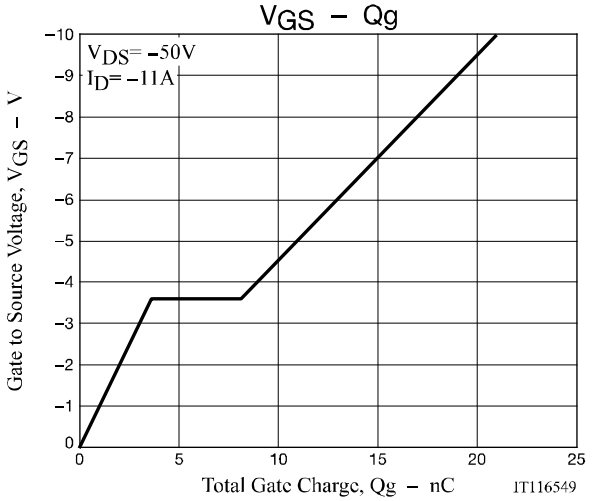

RDS(on) – Tc
Single pulse
VGS= –4.0V, ID= –3.0A
VGS= –4.5V, ID= –3.0A
VGS= –10.0V, ID= –5.5A
Static Drain to Source
On-State Resistance, RDS(on) – mΩ
Case Temperature, Tc – °C
IT16544

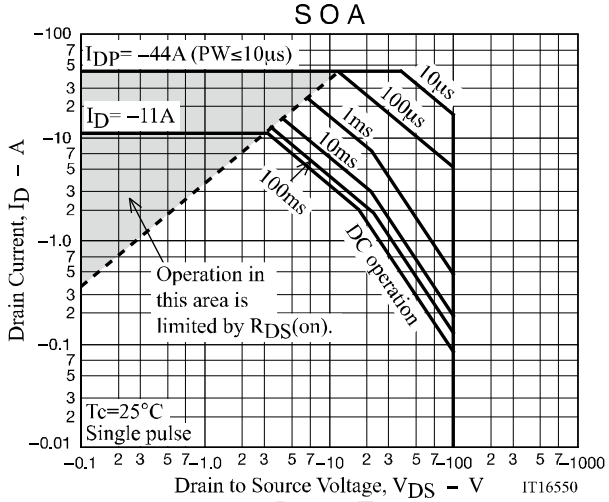

gFS – ID
VDS= –10V
Single pulse
25°C
Tc= –25°C
75°C
Forward Transconductance, gFS – S
Drain Current, ID – A
IT16545

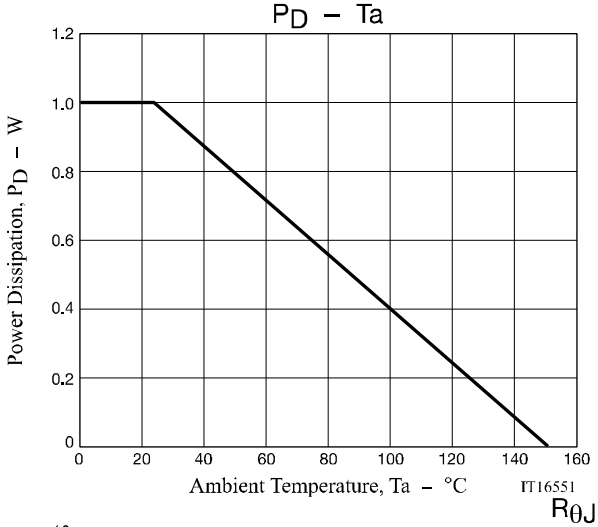

IS – VSD
VGS=0V
Single pulse
Tc=75°C
25°C
–25°C
Source Current, IS – A
Forward Diode Voltage, VSD – V
IT16546

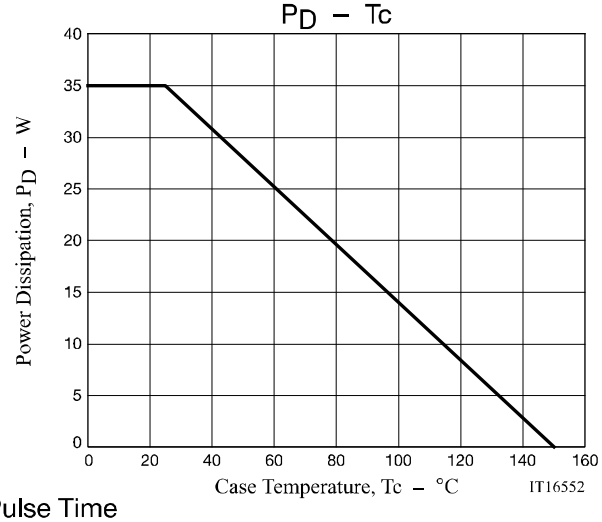

SW Time – ID
VDD= –50V
VGS= –10V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT16547

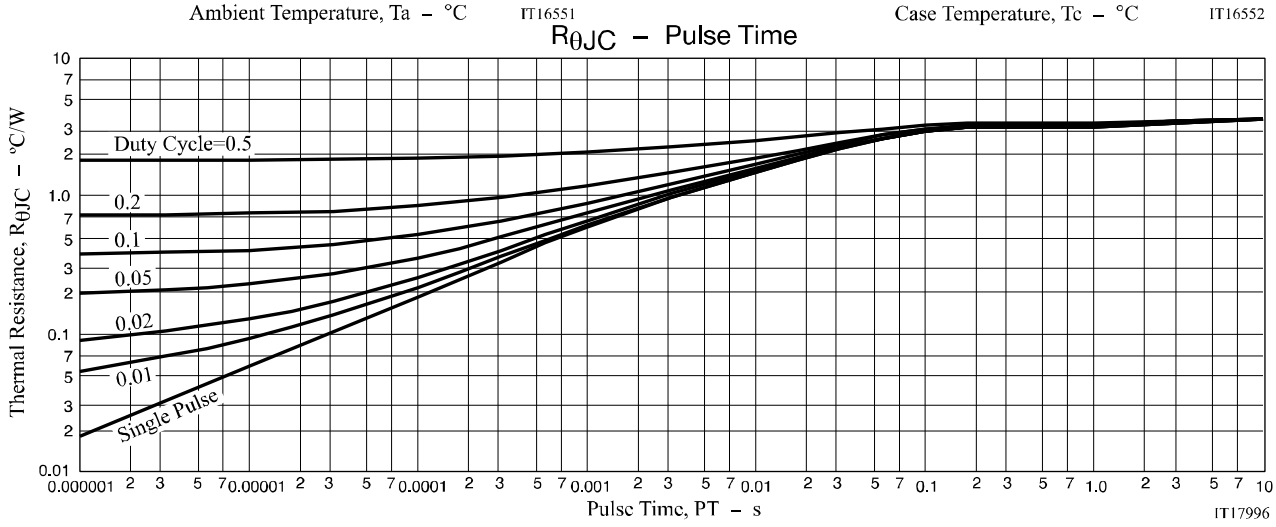

Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain to Source Voltage, VDS – V
IT16548


VGS – Qg
VDS= –50V
ID= –11A
Gate to Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT16549


S O A
IDP= –44A (PW≤10μs)
ID= –11A
10μs
100μs
1ms
10ms
100ms
DC operation
Operation in this area is limited by RDS(on).
Tc=25°C
Single pulse
Drain Current, ID – A
Drain to Source Voltage, VDS – V
IT16550

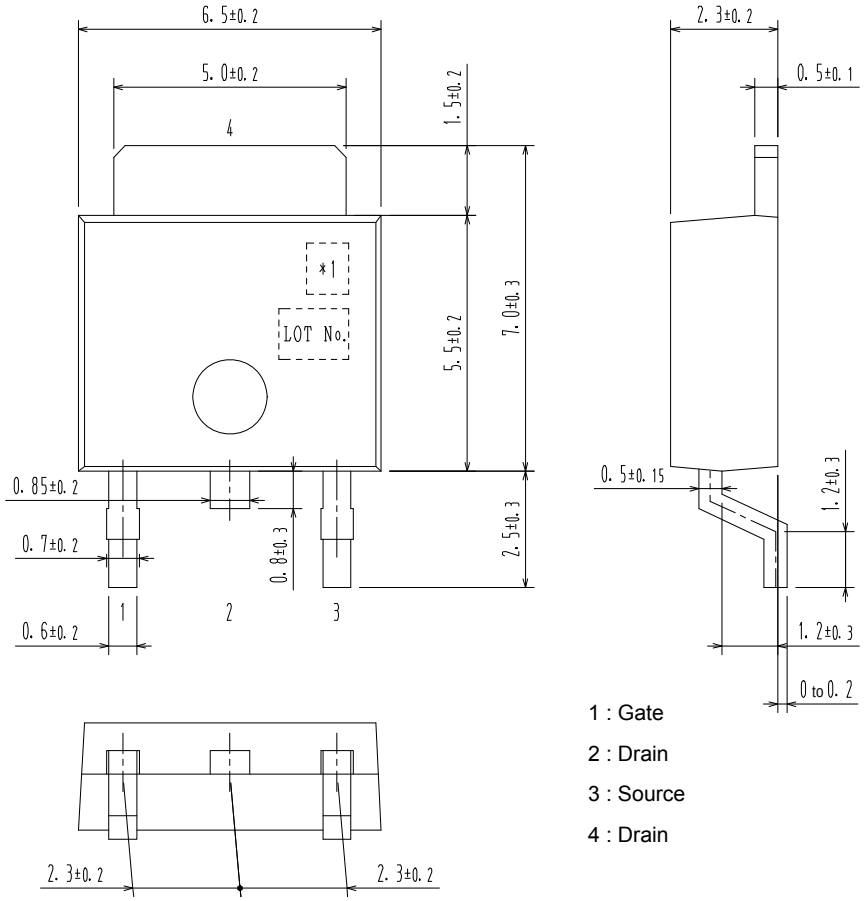

PD – Ta
Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT16551


PD – Tc
Power Dissipation, PD – W
Case Temperature, Tc – °C
IT16552


RθJC – Pulse Time
Duty Cycle=0.5
0.2
0.1
0.05
0.02
0.01
Single Pulse
Thermal Resistance, RθJC – °C/W
Pulse Time, PT – s
IT17996

**PACKAGE DIMENSIONS**
unit : mm

**DPAK / TP-FA**
CASE 369AH
ISSUE O

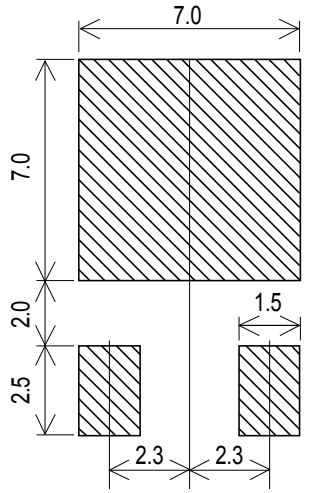



1 : Gate
2 : Drain
3 : Source
4 : Drain

Pin 2 is idle pin with electrical designation only carried.

*1:Lot indication

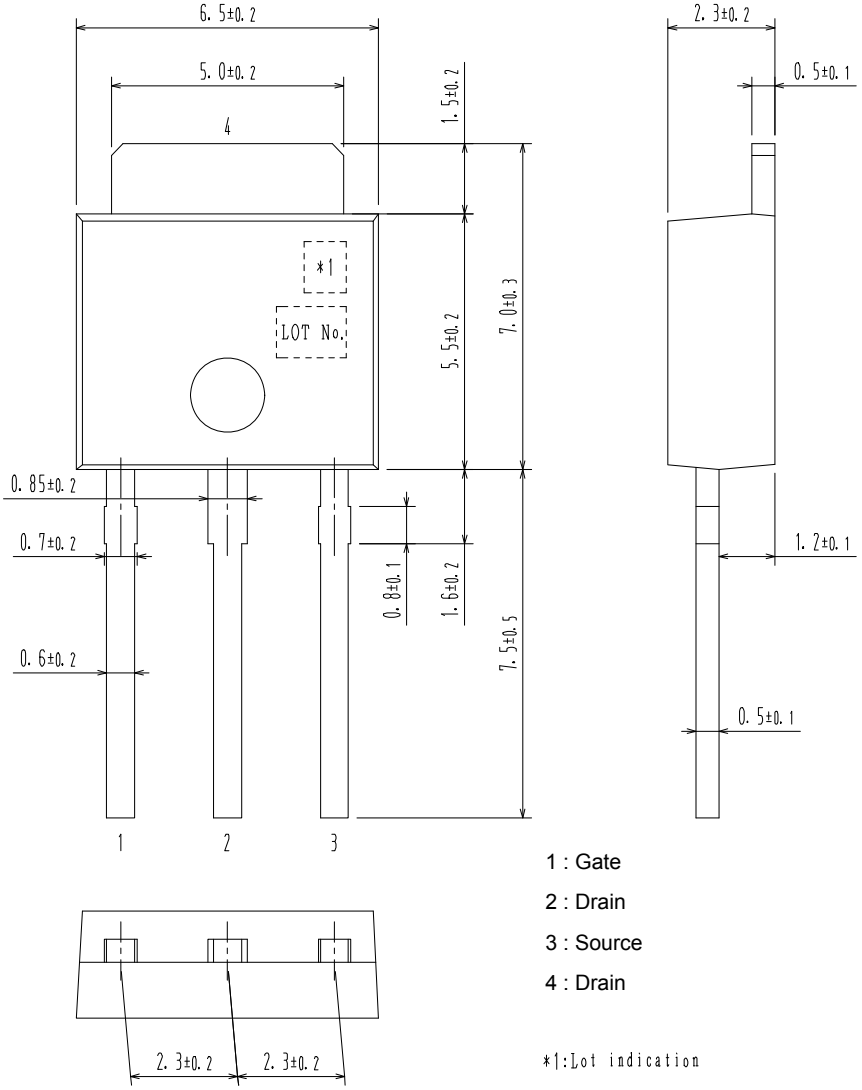
**Recommended Soldering Footprint**



## PACKAGE DIMENSIONS

unit : mm

**IPAK / TP**
CASE 369AJ
ISSUE O




1 : Gate
2 : Drain
3 : Source
4 : Drain

*1:Lot indication

## ORDERING INFORMATION

| Device | Marking | Package | Shipping (Qty / Packing) |
|---|---|---|---|
| SFT1345-H | T1345 | IPAK / TP<br>(Pb-Free / Halogen Free) | 500 / Bag |
| SFT1345-TL-H | T1345 | DPAK / TP-FA<br>(Pb-Free / Halogen Free) | 700 / Tape & Reel |

† For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D. http://www.onsemi.com/pub_link/Collateral/BRD8011-D.PDF

Note on usage : Since the SFT1345 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

# Mouser Electronics

Authorized Distributor

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ON Semiconductor:

SFT1345-H SFT1345-TL-H

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