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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	

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 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

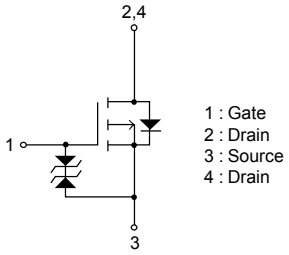
Note 1 : Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL RESISTANCE RATINGS

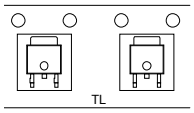
Parameter	Symbol	Value	Unit
Junction to Case Steady State	$R_{\theta JC}$	3.57	°C/W
Junction to Ambient (Note 2)	$R_{\theta JA}$	125	

Note 2 : Insertion mounted

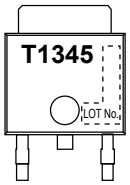
ELECTRICAL CONNECTION
P-Channel



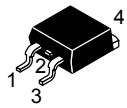
PACKING TYPE : TL



MARKING



IPAK(TP)



DPAK(TP-FA)

ORDERING INFORMATION

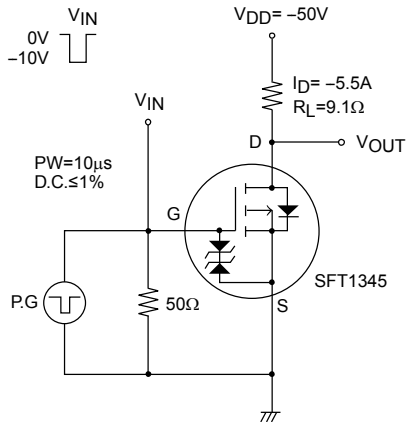
See detailed ordering and shipping information on page 6 of this data sheet.

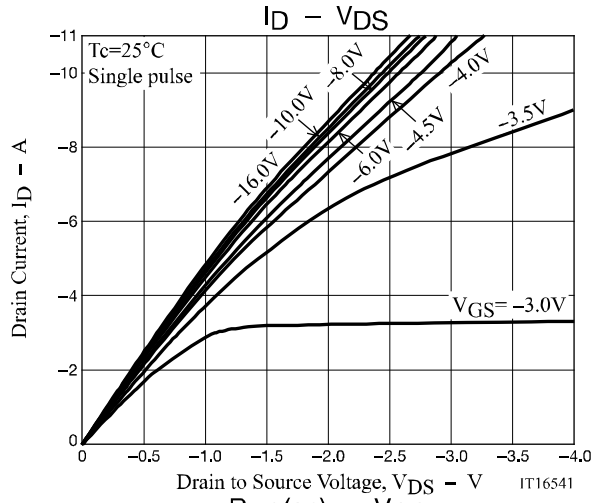
ELECTRICAL CHARACTERISTICS at Ta = 25°C (Note 3)

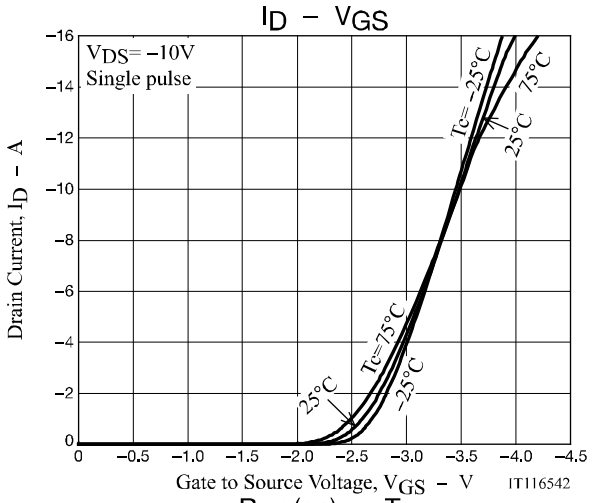
Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=−1mA, V_{GS}=0V	−100			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=−100V, V_{GS}=0V			−1	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0V			±10	μA
Gate Threshold Voltage	$V_{GS}(th)$	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

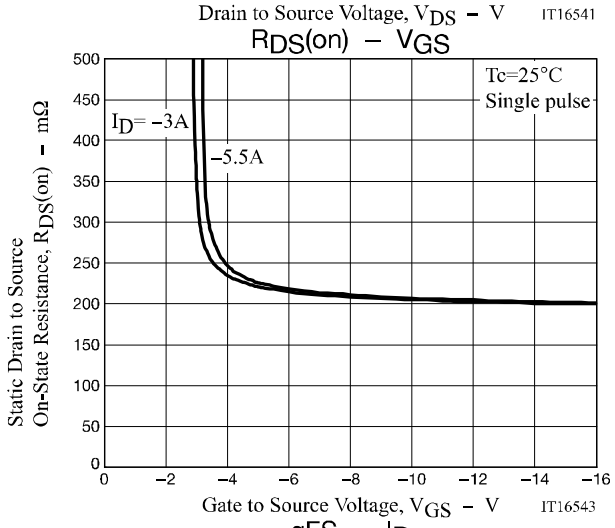
Note 3 : Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

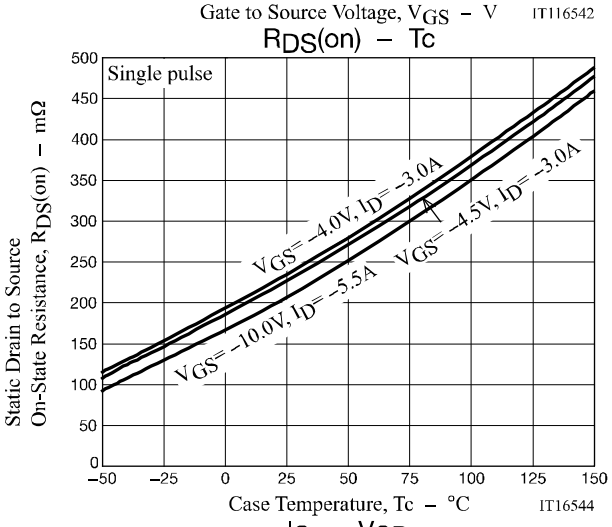
Switching Time Test Circuit

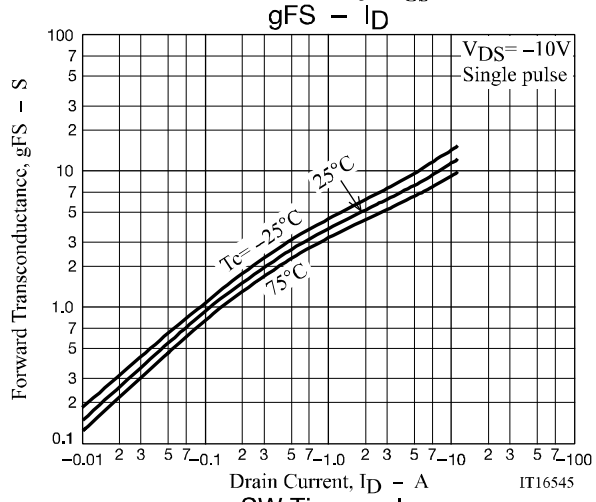


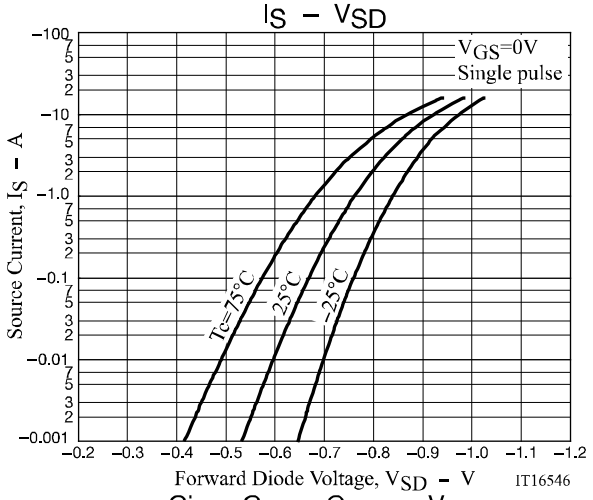

ID – VDS
Tc=25°C
Single pulse
–8.0V
–10.0V
–4.0V
–16.0V
–6.0V
–4.5V
–3.5V
VGS= –3.0V
Drain Current, ID – A
Drain to Source Voltage, VDS – V
IT16541

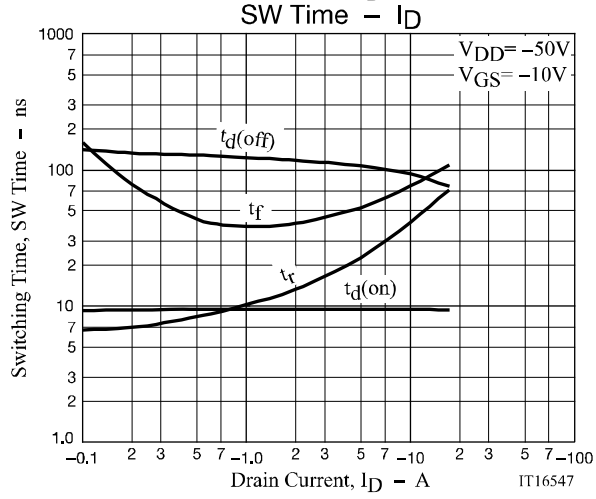

ID – VGS
VDS= –10V
Single pulse
Tc= –25°C
75°C
25°C
Tc=75°C
25°C
–25°C
Drain Current, ID – A
Gate to Source Voltage, VGS – V
IT16542

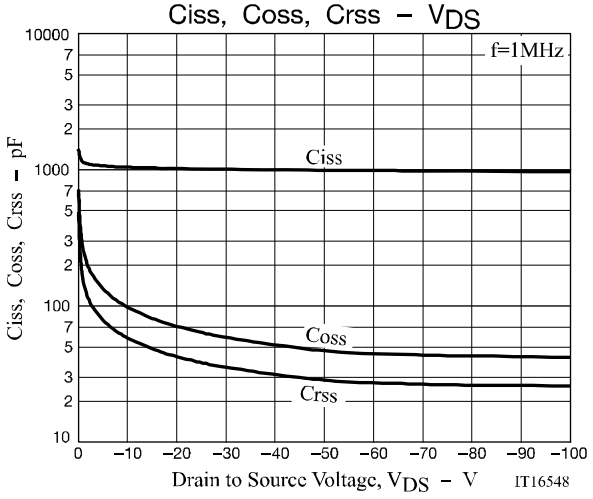

RDS(on) – VGS
Tc=25°C
Single pulse
ID= –3A
–5.5A
Static Drain to Source
On-State Resistance, RDS(on) – mΩ
Gate to Source Voltage, VGS – V
IT16543

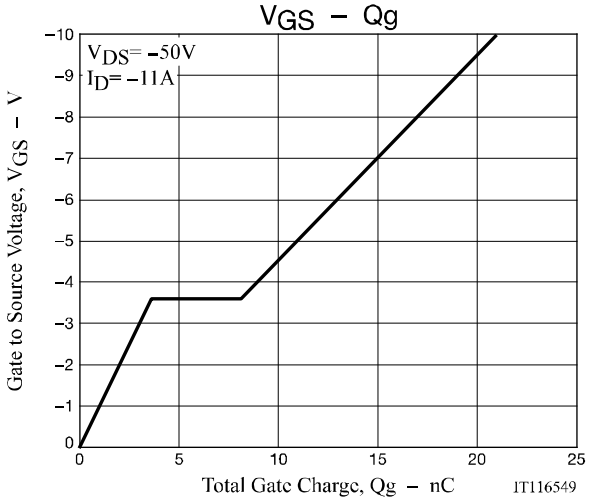

RDS(on) – Tc
Single pulse
VGS= –4.0V, ID= –3.0A
VGS= –4.5V, ID= –3.0A
VGS= –10.0V, ID= –5.5A
Static Drain to Source
On-State Resistance, RDS(on) – mΩ
Case Temperature, Tc – °C
IT16544

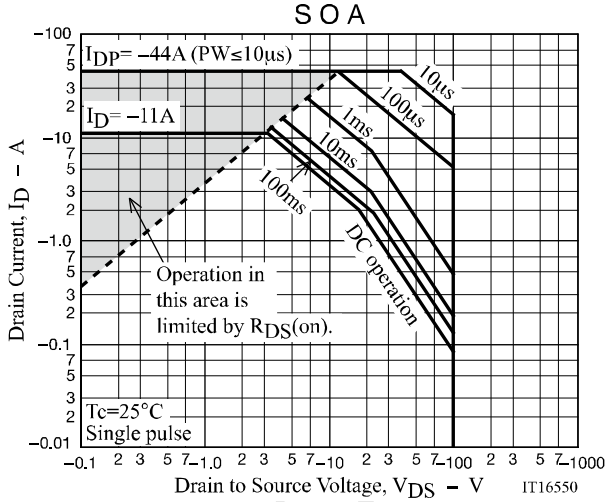

gFS – ID
VDS= –10V
Single pulse
25°C
Tc= –25°C
75°C
Forward Transconductance, gFS – S
Drain Current, ID – A
IT16545

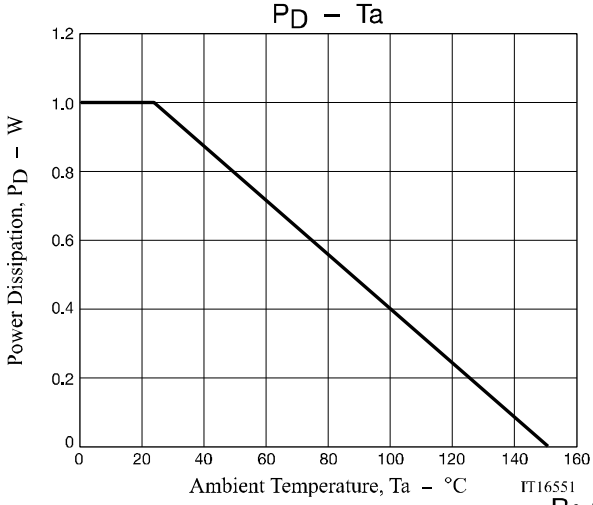

IS – VSD
VGS=0V
Single pulse
Tc=75°C
25°C
–25°C
Source Current, IS – A
Forward Diode Voltage, VSD – V
IT16546

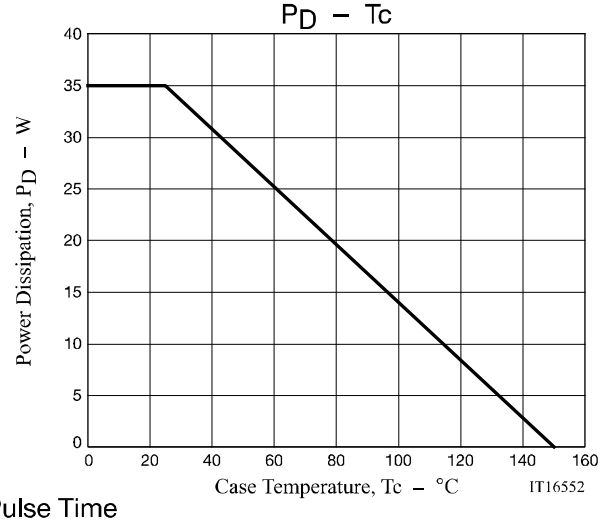

SW Time – ID
VDD= –50V
VGS= –10V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT16547

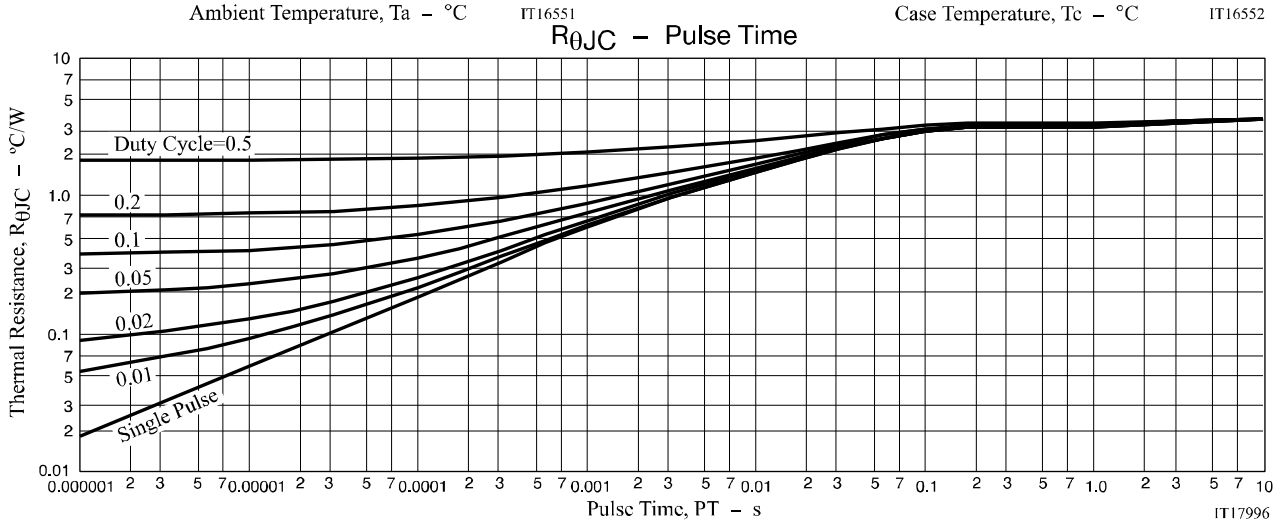

Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain to Source Voltage, VDS – V
IT16548


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

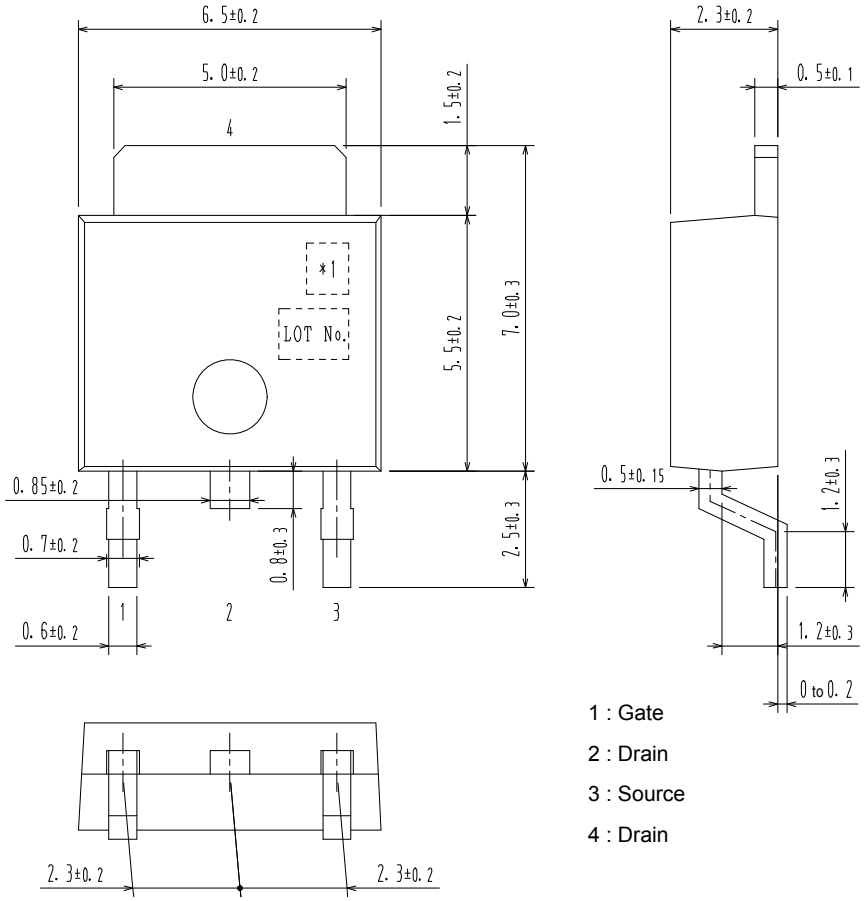

PD – Ta
Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT16551


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

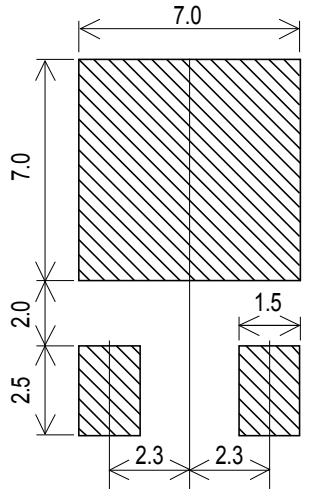


1 : Gate
2 : Drain
3 : Source
4 : Drain

Pin 2 is idle pin with electrical designation only carried.

*1:Lot indication

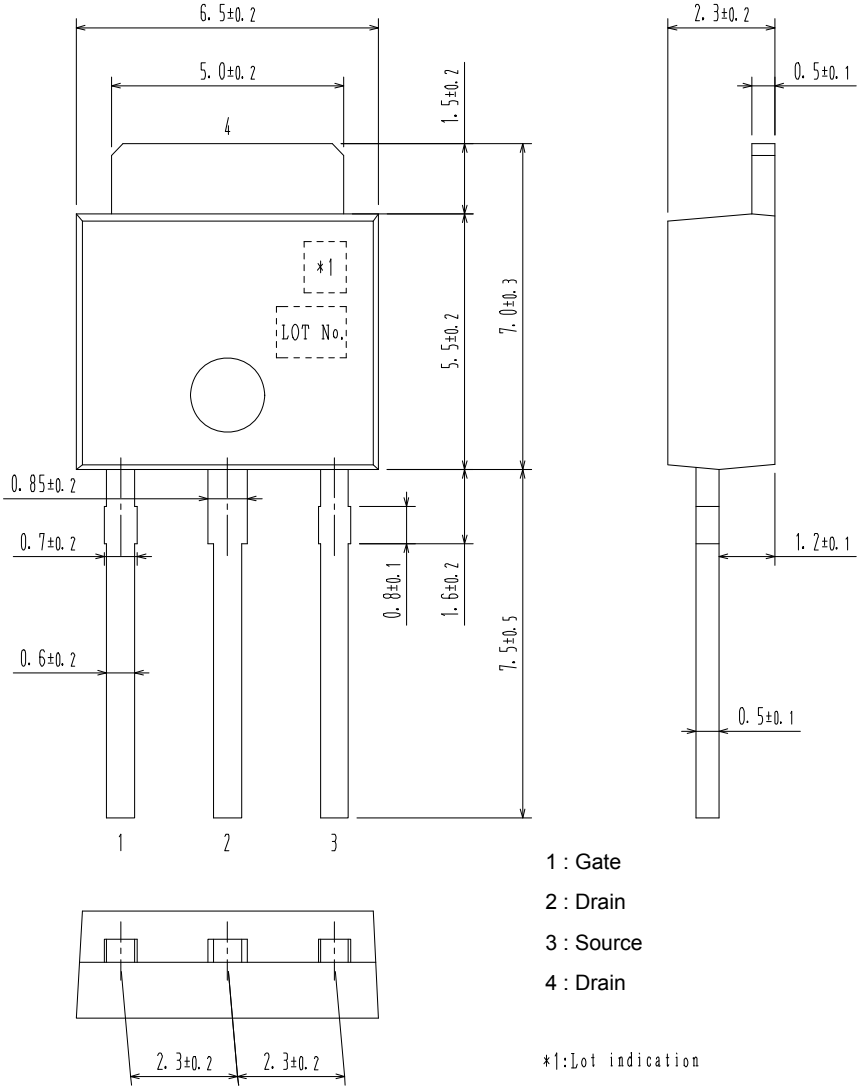
Recommended Soldering Footprint



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 (Pb-Free / Halogen Free)	500 / Bag
SFT1345-TL-H	T1345	DPAK / TP-FA (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.