Ordering number : ENA1559B

SFT1342

Power MOSFET
–60V, 62mΩ, –12A, Single P-Channel

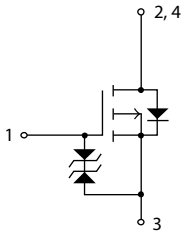
ON Semiconductor®

http://onsemi.com

Features

- Low On-Resistance
- Low Gate Charge
- Pb-free and RoHS Compliance
- High Speed Switching
- ESD Diode-Protected Gate

Electrical Connection
P-Channel



Specifications

Absolute Maximum Ratings at Ta = 25°C

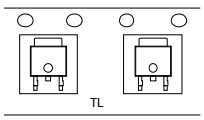
Parameter		Symbol	Value	Unit
Drain to Source Voltage		V_{DSS}	–60	V
Gate to Source Voltage		V_{GSS}	±20	V
Drain Current (DC)		I_D	–12	A
Drain Current PW≤10μs, duty cycle≤1%		I_{DP}	–48	A
Power Dissipation		P_D	1.0	W
	Tc=25°C		15	W
Junction Temperature		Tj	150	°C
Storage Temperature		Tstg	–55 to +150	°C

Thermal Resistance Ratings

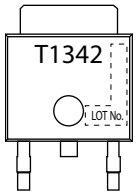
Parameter	Symbol	Value	Unit
Junction to Case Steady State	$R_{\theta JC}$	8.33	°C/W
Junction to Ambient *[1]	$R_{\theta JA}$	125	

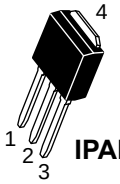
Note : *[1] Insertion mounted

Packing Type:TL

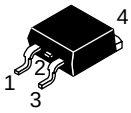


Marking





IPAK(TP)



DPAK(TP-FA)

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.

ORDERING INFORMATION

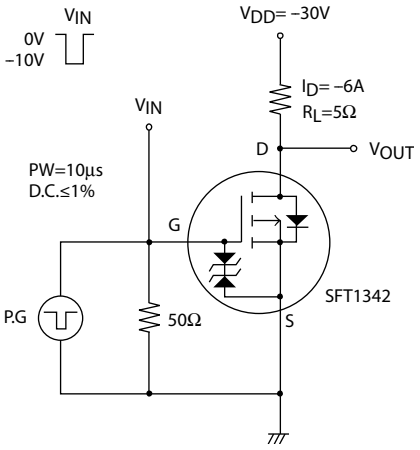
See detailed ordering and shipping information on page 6 of this data sheet.

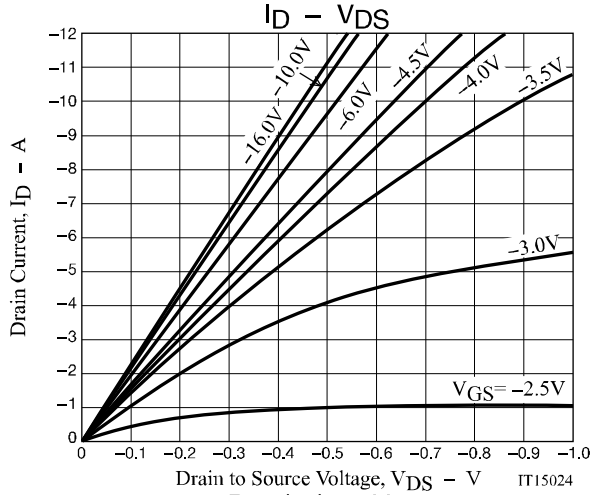
Electrical Characteristics at Ta = 25°C

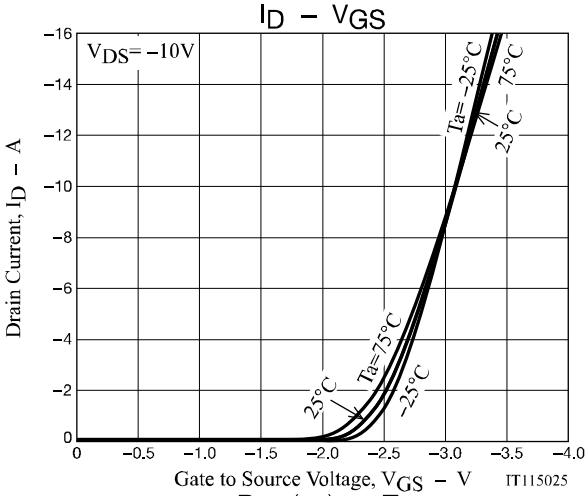
Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D= –1mA, V_{GS}=0V	–60			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}= –60V, V_{GS}=0V			–1	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0V			±10	μA
Gate Threshold Voltage	$V_{GS}(th)$	V_{DS}= –10V, I_D= –1mA	–1.2		–2.6	V
Forward Transconductance	g_{FS}	V_{DS}= –10V, I_D= –6A		11		S
Static Drain to Source On-State Resistance	$R_{DS}(on)1$	I_D= –6A, V_{GS}= –10V		47	62	mΩ
	$R_{DS}(on)2$	I_D= –6A, V_{GS}= –4.5V		62	87	mΩ
	$R_{DS}(on)3$	I_D= –6A, V_{GS}= –4V		68	96	mΩ
Input Capacitance	Ciss	V_{DS}= –20V, f=1MHz		1150		pF
Output Capacitance	Coss			115		pF
Reverse Transfer Capacitance	Crss			95		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		10		ns
Rise Time	t_r			37		ns
Turn-OFF Delay Time	$t_d(off)$			135		ns
Fall Time	t_f			75		ns
Total Gate Charge	Qg	V_{DS}= –30V, V_{GS}= –10V, I_D= –12A		26		nC
Gate to Source Charge	Qgs			3.5		nC
Gate to Drain “Miller” Charge	Qgd			5		nC
Forward Diode Voltage	V_{SD}	I_S= –12A, V_{GS}=0V		–0.95	–1.2	V

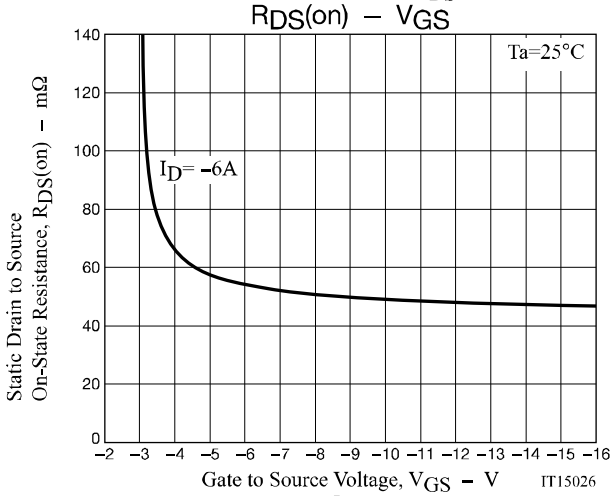
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

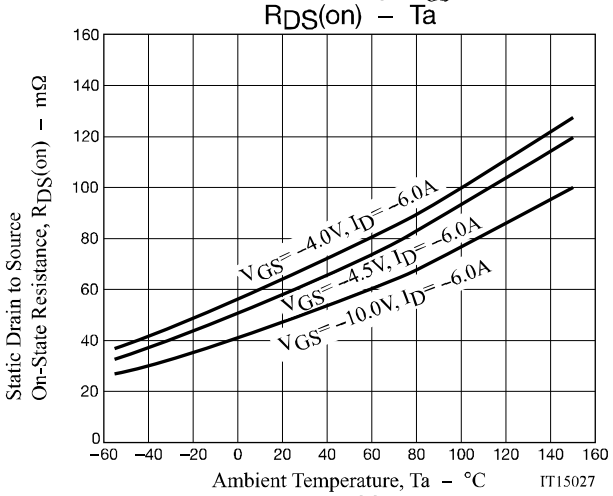
Switching Time Test Circuit

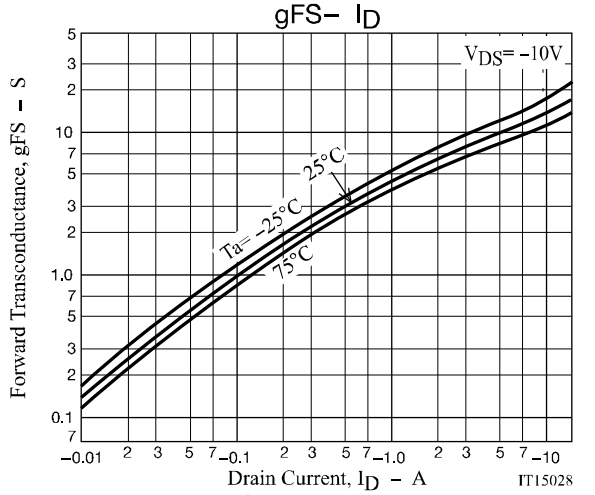


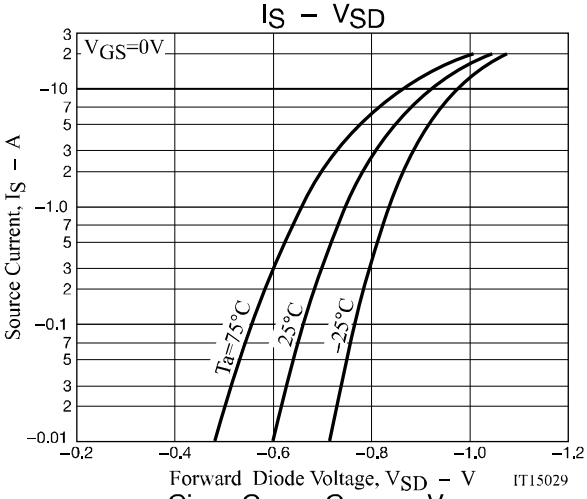

ID – VDS
Drain Current, ID – A
Drain to Source Voltage, VDS – V
IT15024
–16.0V
–10.0V
–6.0V
–4.5V
–4.0V
–3.5V
–3.0V
VGS= –2.5V

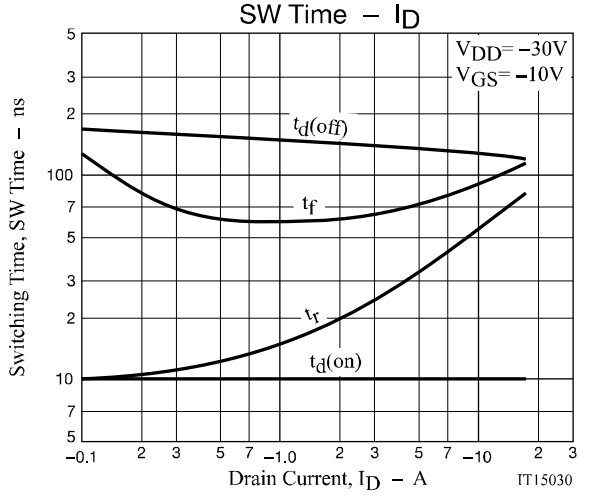

ID – VGS
Drain Current, ID – A
Gate to Source Voltage, VGS – V
IT115025
VDS= –10V
Ta= –25°C
25°C
75°C
25°C
Ta=75°C
–25°C

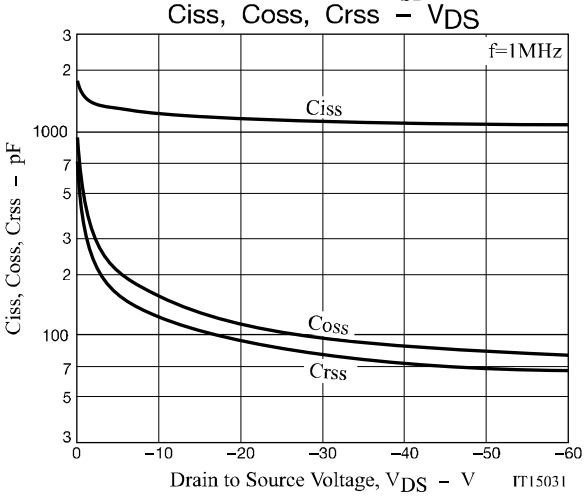

RDS(on) – VGS
Static Drain to Source On-State Resistance, RDS(on) – mΩ
Gate to Source Voltage, VGS – V
IT15026
Ta=25°C
ID= –6A

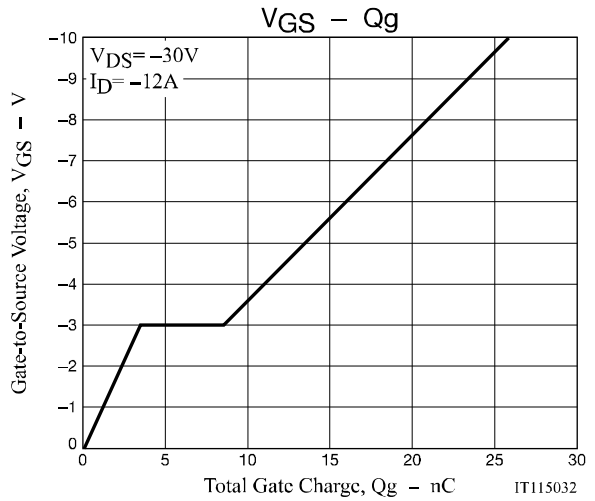

RDS(on) – Ta
Static Drain to Source On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT15027
VGS= –4.0V, ID= –6.0A
VGS= –4.5V, ID= –6.0A
VGS= –10.0V, ID= –6.0A

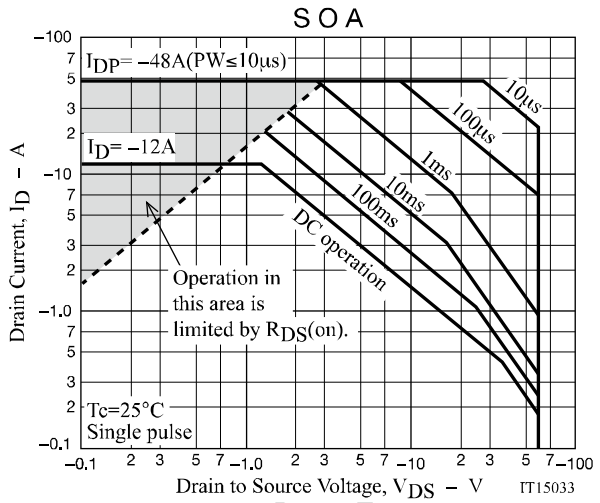

gFS– ID
Forward Transconductance, gFS – S
Drain Current, ID – A
IT15028
VDS= –10V
Ta= –25°C
25°C
75°C

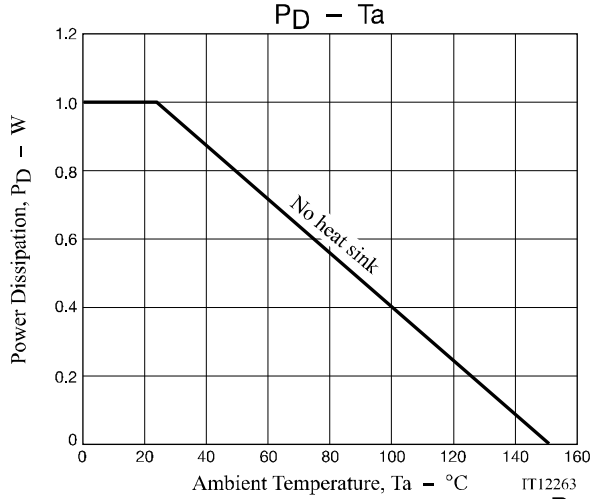

IS – VSD
Source Current, IS – A
Forward Diode Voltage, VSD – V
IT15029
VGS=0V
Ta=75°C
25°C
–25°C

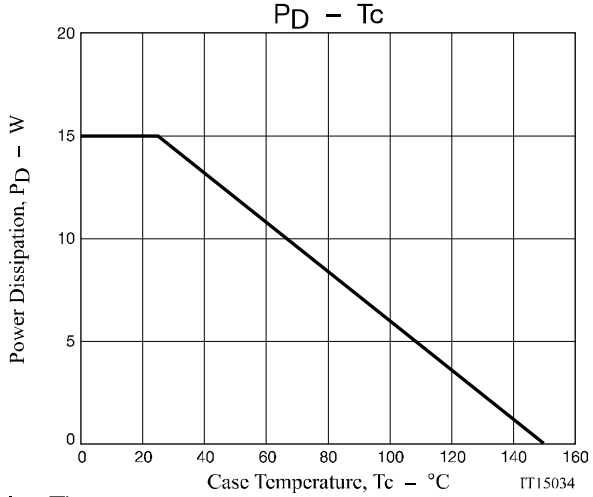

SW Time – ID
Switching Time, SW Time – ns
Drain Current, ID – A
IT15030
VDD= –30V
VGS= –10V
td(off)
tf
tr
td(on)

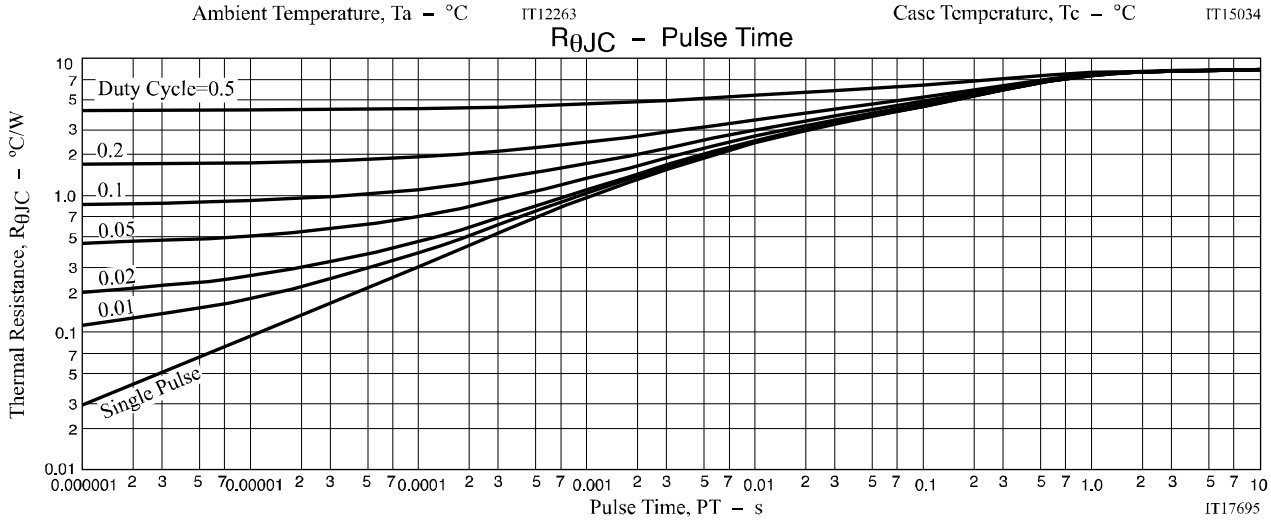

Ciss, Coss, Crss – VDS
Ciss, Coss, Crss – pF
Drain to Source Voltage, VDS – V
IT15031
f=1MHz
Ciss
Coss
Crss


VGS – Qg
VDS= –30V
ID= –12A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT115032


S O A
IDP= –48A(PW≤10μs)
ID= –12A
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
IT15033


PD – Ta
No heat sink
Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT12263


PD – Tc
Power Dissipation, PD – W
Case Temperature, Tc – °C
IT15034

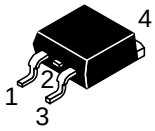

RθJC – Pulse Time
Duty Cycle=0.5
0.2
0.1
0.05
0.02
0.01
Single Pulse
Thermal Resistance, RθJC – °C/W
Pulse Time, PT – s
IT17695

Package Dimensions

SFT1342-TL-E/ SFT1342-TL-W

DPAK/TP-FA

unit : mm

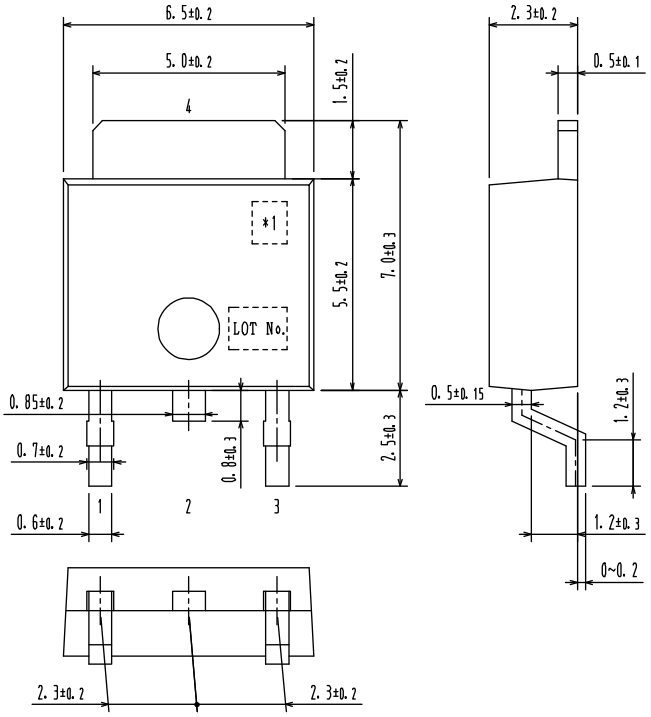


1:Gate

2:Drain

3:Source

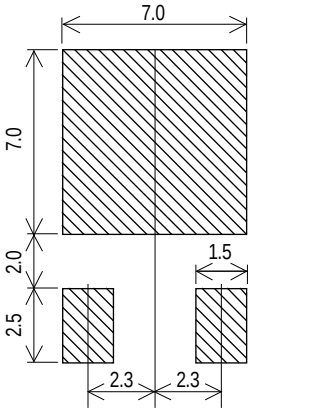
4:Drain



Pin 2 is idle pin with electrical designation only carried.

*1:Lot indication

Recommended Soldering Footprint

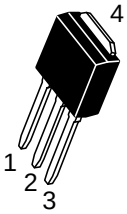


Package Dimensions

SFT1342-E/ SFT1342-W

IPAK/TP

Unit : mm

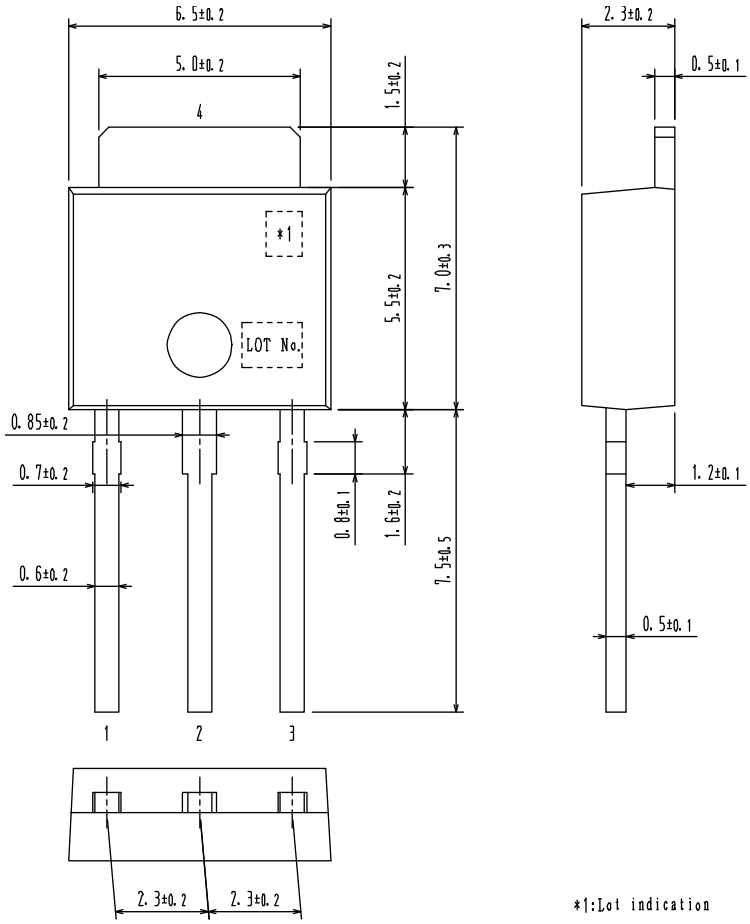


1:Gate

2:Drain

3:Source

4:Drain



Ordering & Package Information

Device	Package	Shipping	Note
SFT1342-E	IPAK(TP) SC-64,TO-251	500pcs. / bag	Pb-Free
SFT1342-W			Pb-Free and Halogen Free
SFT1342-TL-E	DPAK(TP-FA) SC-63,TO-252	700pcs. / reel	Pb-Free
SFT1342-TL-W			Pb-Free and Halogen Free

Note on usage : Since the SFT1342 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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