Ordering number : EN9051B

SFT1452

N-Channel Power MOSFET
250V, 3A, 2.4Ω, Single DPAK/IPAK

ON Semiconductor®
http://onsemi.com

Features

- ON-resistance $R_{DS}(on)$=1.8Ω(typ.)
- Input Capacitance Ciss=210pF(typ.)
- 10V drive
- Halogen free compliance
- ESD Diode-Protected Gate

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		250	V
Gate-to-Source Voltage	V_{GSS}		±30	V
Drain Current (DC)	I_D		3	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	12	A
Power Dissipation	P_D		1	W
		Tc=25°C	26	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		−55 to +150	°C

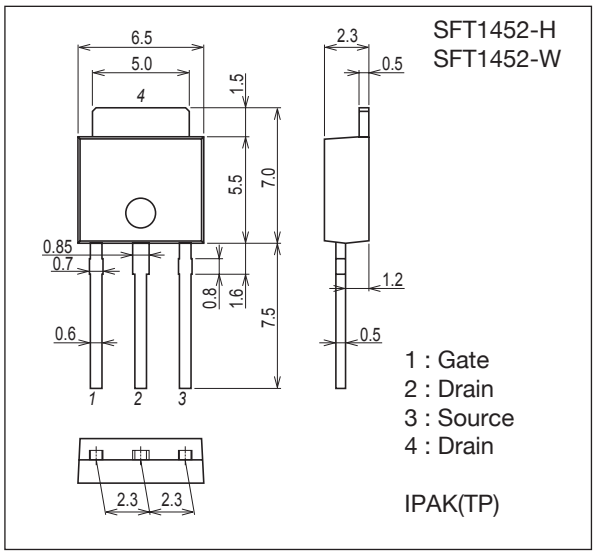
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

Thermal Resistance Ratings

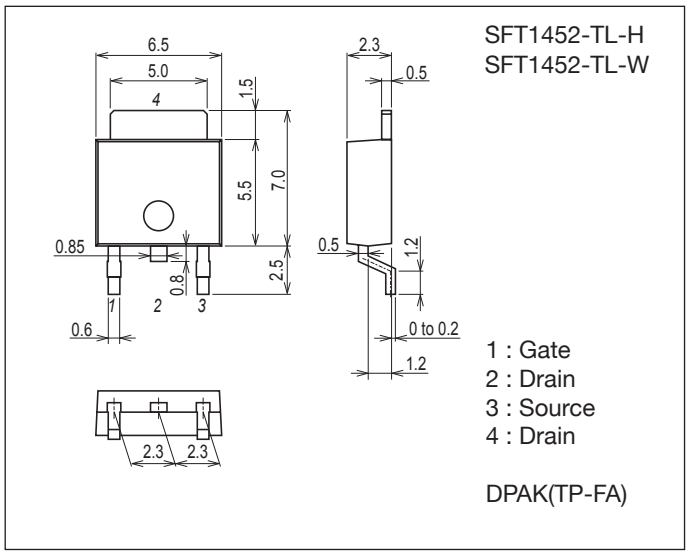
Parameter	Symbol	Value	Unit
Junction to Case Steady State	$R_{\theta JC}$	4.81	°C/W
Junction to Ambient *1	$R_{\theta JA}$	125	

Note : *1 Insertion mounted

Package Dimensions unit : mm (typ)
7518-004



Package Dimensions unit : mm (typ)
7003-004



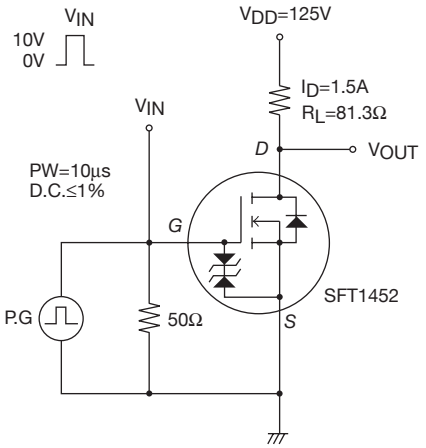
ORDERING INFORMATION
See detailed ordering and shipping information on page 2 of this data sheet.

Electrical Characteristics at Ta=25°C

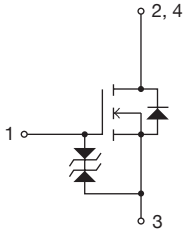
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=1mA, V_{GS}=0V	250			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=250V, V_{GS}=0V			1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±24V, V_{DS}=0V			±10	μA
Gate Threshold Voltage	$V_{GS}(th)$	V_{DS}=10V, I_D=1mA	2.5		4.5	V
Forward Transconductance	g_{FS}	V_{DS}=10V, I_D=1.5A		1.7		S
Static Drain-to-Source On-State Resistance	$R_{DS}(on)$	I_D=1.5A, V_{GS}=10V		1.8	2.4	Ω
Input Capacitance	Ciss	V_{DS}=20V, f=1MHz		210		pF
Output Capacitance	Coss			20		pF
Reverse Transfer Capacitance	Crss			7		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		8		ns
Rise Time	t_r			9		ns
Turn-OFF Delay Time	$t_d(off)$			13		ns
Fall Time	t_f			14		ns
Total Gate Charge	Qg	V_{DS}=125V, V_{GS}=10V, I_D=3A		4.2		nC
Gate-to-Source Charge	Qgs			1.4		nC
Gate-to-Drain “Miller” Charge	Qgd			1.0		nC
Forward Diode Voltage	V_{SD}	I_S=3A, 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



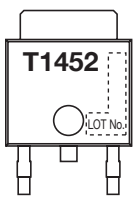
Electrical Connection



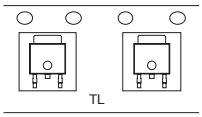
Ordering & Package Information

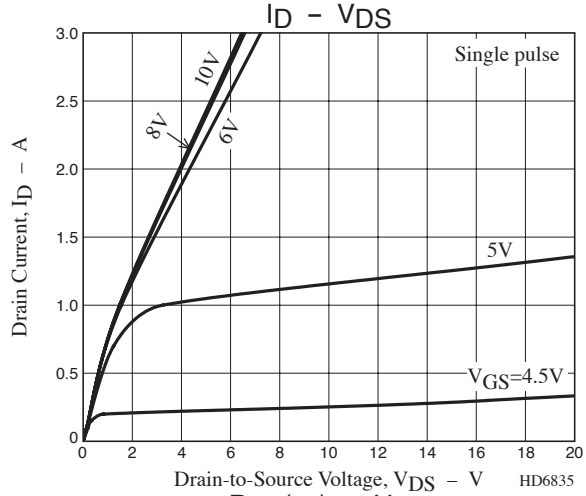
Device	Package	Shipping	memo
SFT1452-H	IPAK(TP)	500pcs./bag	Pb-Free and Halogen Free
SFT1452-W	SC-64, TO-251		
SFT1452-TL-H	DAPK(TP-FA)	700pcs./reel	
SFT1452-TL-W	SC-63, TO-252		

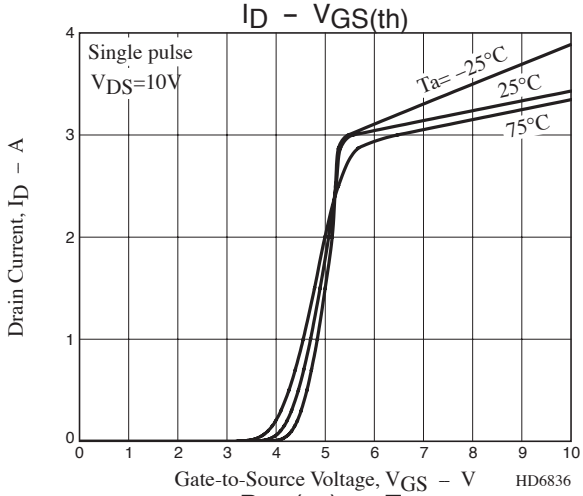
Marking

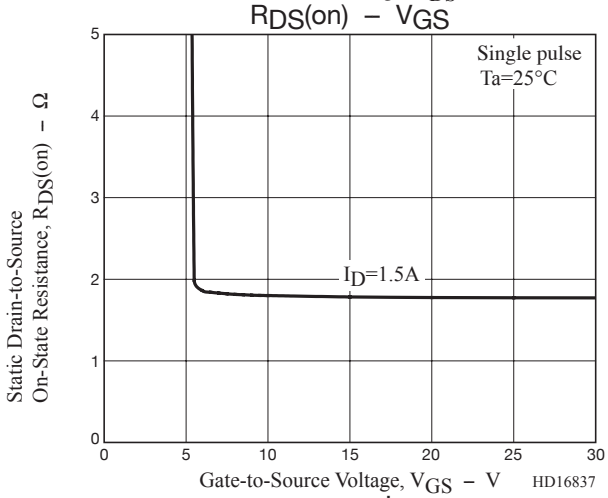


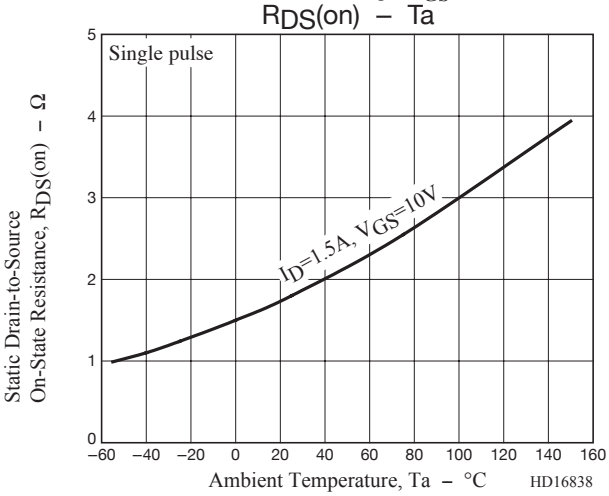
Packing Type:TL

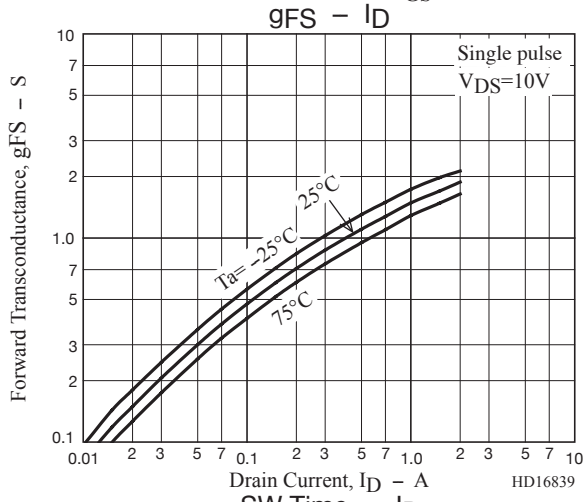


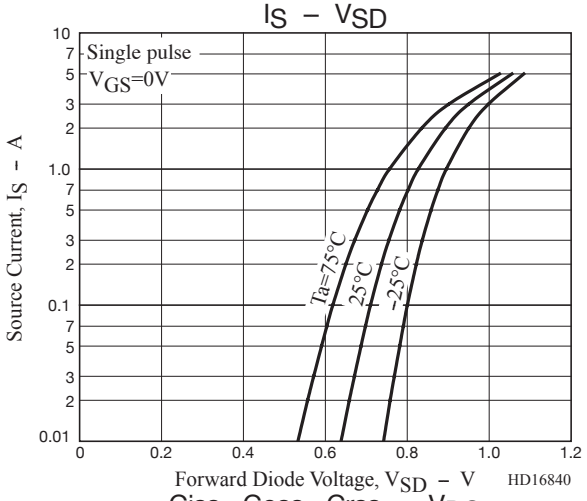

ID – VDS
Single pulse
10V
8V
6V
5V
VGS=4.5V
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
HD6835

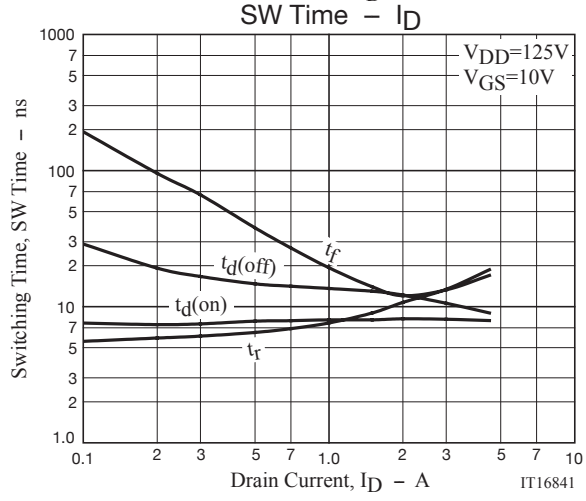

ID – VGS(th)
Single pulse
VDS=10V
Ta= –25°C
25°C
75°C
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
HD6836

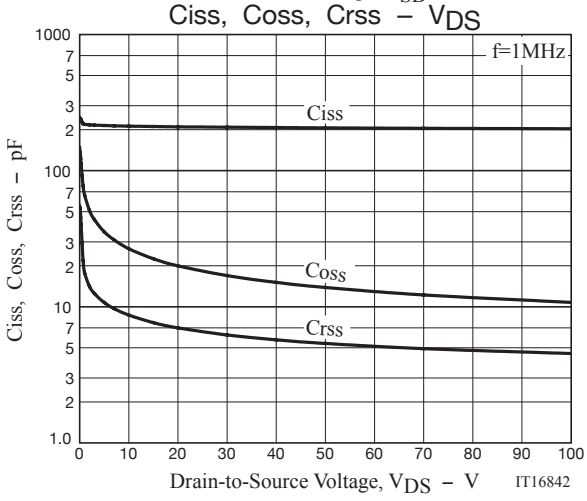

RDS(on) – VGS
Single pulse
Ta=25°C
ID=1.5A
Static Drain-to-Source
On-State Resistance, RDS(on) – Ω
Gate-to-Source Voltage, VGS – V
HD16837

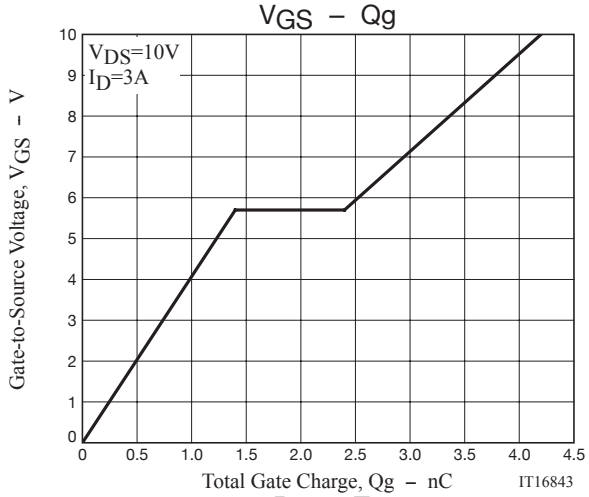

RDS(on) – Ta
Single pulse
ID=1.5A, VGS=10V
Static Drain-to-Source
On-State Resistance, RDS(on) – Ω
Ambient Temperature, Ta – °C
HD16838

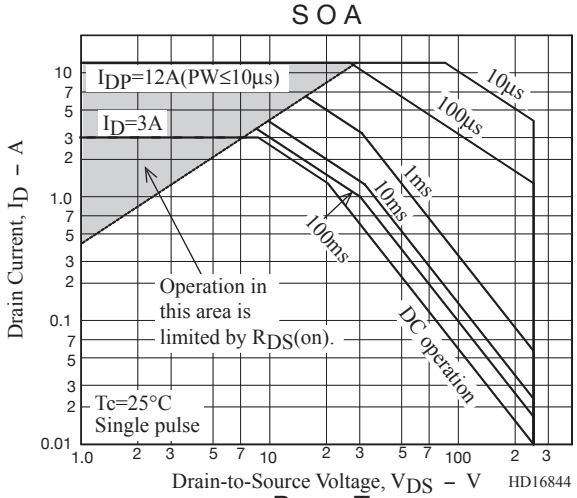

gFS – ID
Single pulse
VDS=10V
Ta= –25°C
25°C
75°C
Forward Transconductance, gFS – S
Drain Current, ID – A
HD16839

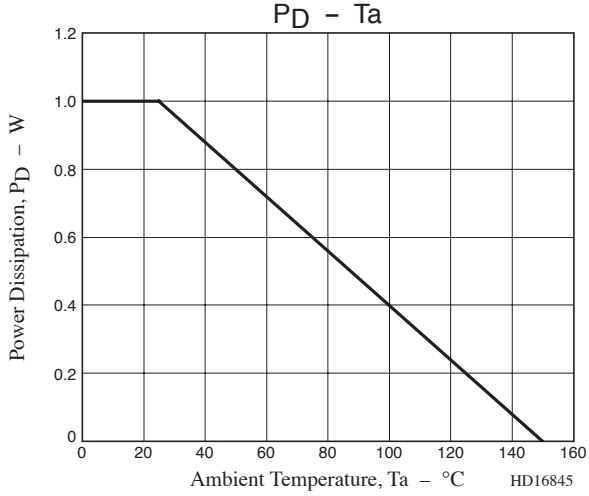

IS – VSD
Single pulse
VGS=0V
Ta=75°C
25°C
–25°C
Source Current, IS – A
Forward Diode Voltage, VSD – V
HD16840

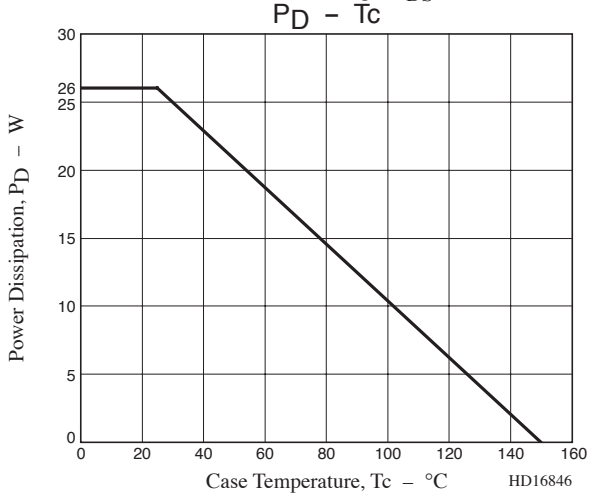

SW Time – ID
VDD=125V
VGS=10V
tf
td(off)
td(on)
tr
Switching Time, SW Time – ns
Drain Current, ID – A
IT16841

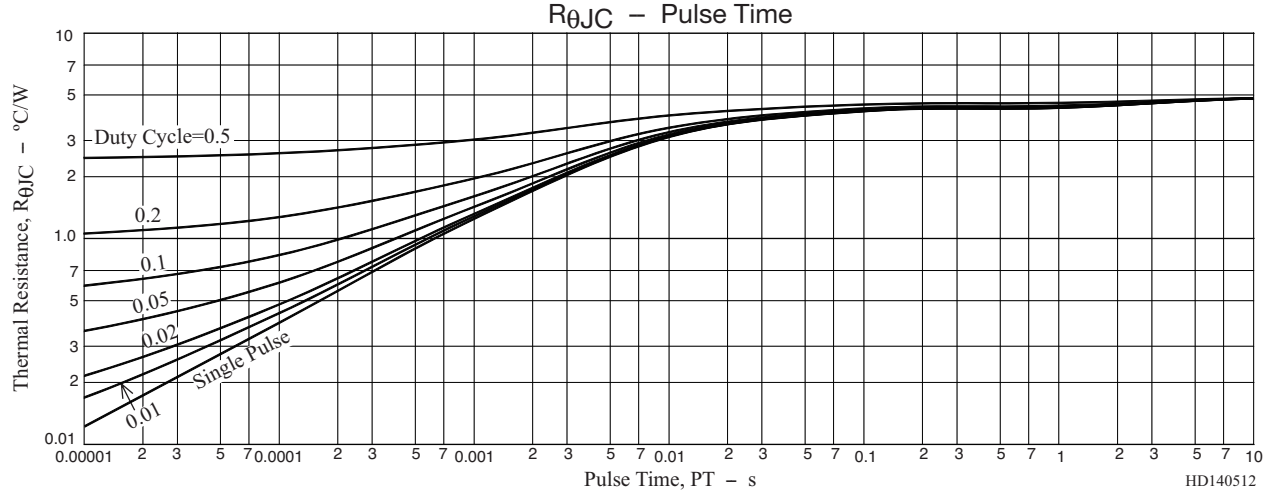

Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT16842


VGS – Qg
VDS=10V
ID=3A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT16843


S O A
IDP=12A(PW≤10μs)
ID=3A
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
HD16844

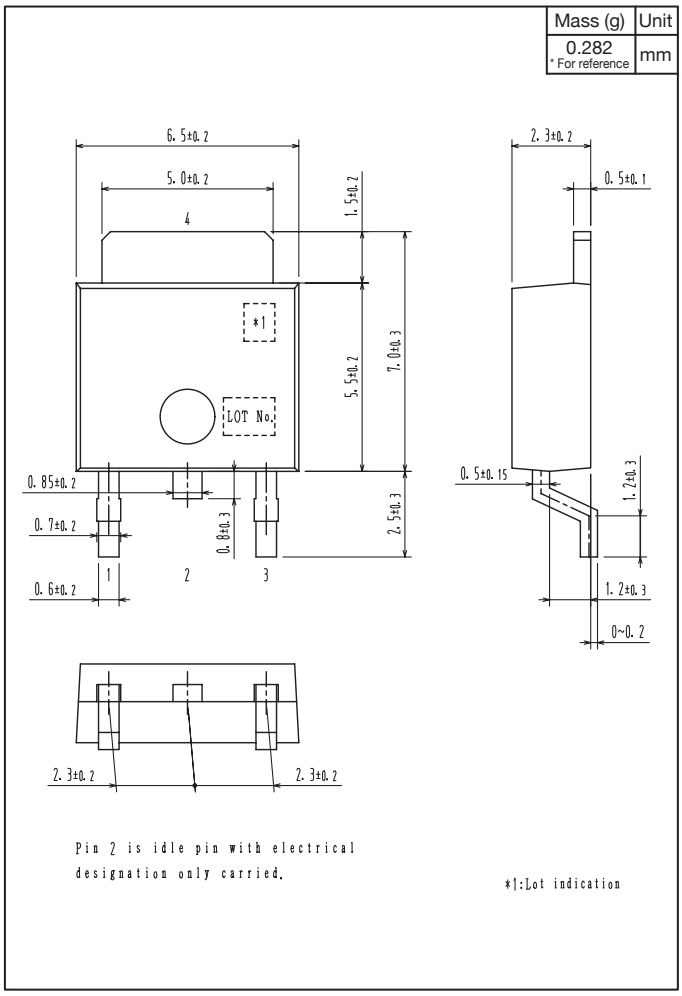

PD – Ta
Power Dissipation, PD – W
Ambient Temperature, Ta – °C
HD16845


PD – Tc
Power Dissipation, PD – W
Case Temperature, Tc – °C
HD16846

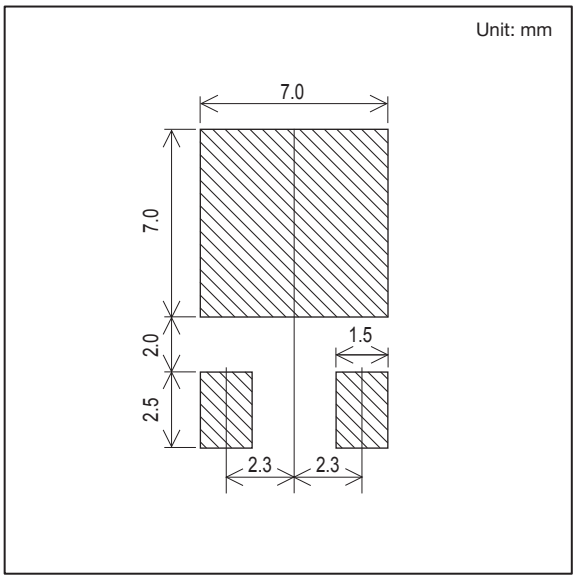

RθJC – Pulse Time
Duty Cycle=0.5
0.2
0.1
0.05
0.02
Single Pulse
0.01
Thermal Resistance, RθJC – °C/W
Pulse Time, PT – s
HD140512

Outline Drawing

SFT1452-TL-H, SFT1452-TL-W

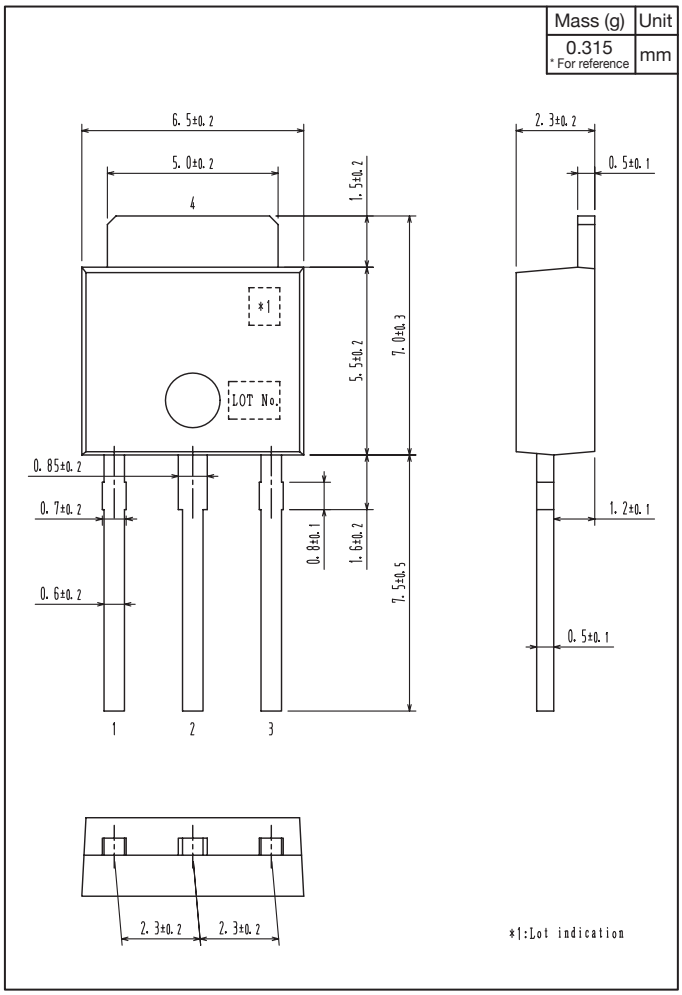


Land Pattern Example



Outline Drawing

SFT1452-H, SFT1452-W



Note on usage : Since the SFT1452 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.