

# 2SK1838(L), 2SK1838(S)

Silicon N-Channel MOS FET

# HITACHI

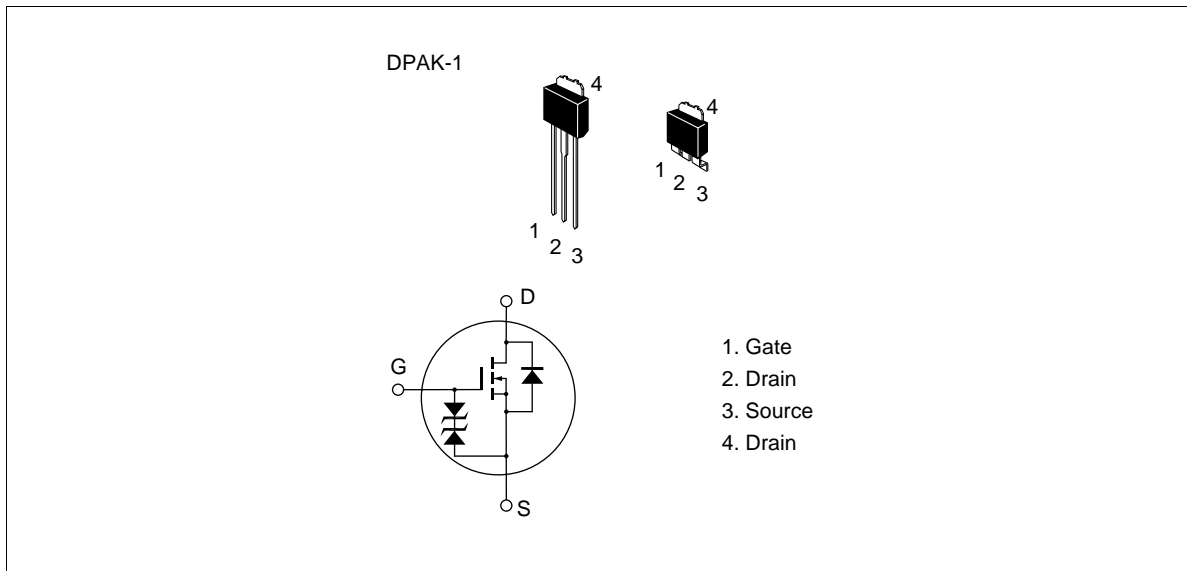
## Application

High speed power switching

## Features

- Low on-resistance
- High speed switching
- Low drive current
- No secondary breakdown
- Suitable for switching regulator, DC-DC converter

## Outline



## 2SK1838(L), 2SK1838(S)

### Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	250	V
Gate to source voltage	$V_{GSS}$	±30	V
Drain current	$I_D$	1	A
Drain peak current	$I_{D(pulse)}^{*1}$	2	A
Body to drain diode reverse drain current	$I_{DR}$	1	A
Channel dissipation	Pch <sup>*2</sup>	10	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

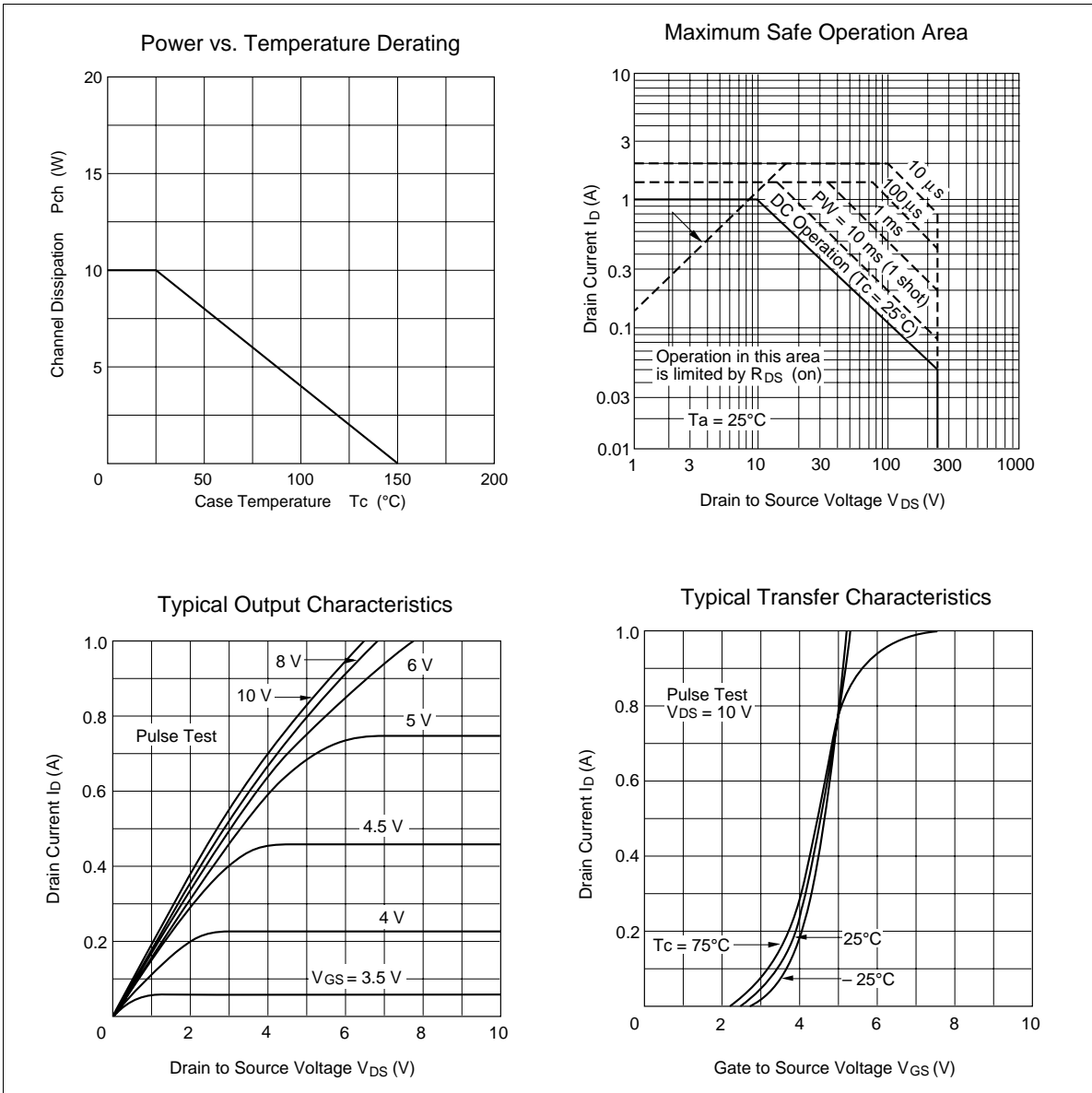
Notes 1.  $PW \leq 10 \mu s$ , duty cycle  $\leq 1\%$   
 2. Value at  $T_c = 25^\circ C$

### Electrical Characteristics (Ta = 25°C)

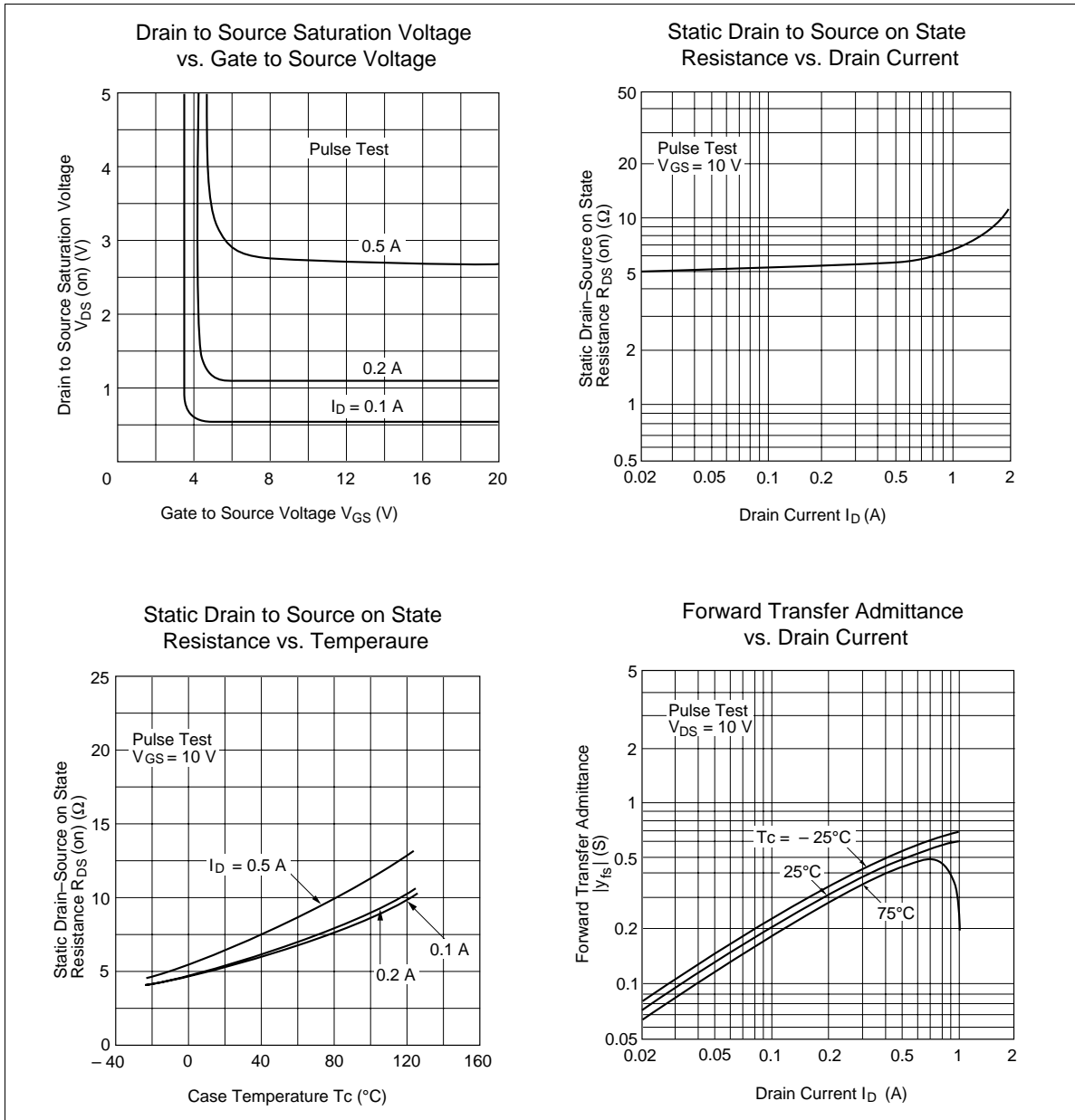
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	250	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±30	—	—	V	$I_G = \pm 100 \mu A$ , $V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	±10	μA	$V_{GS} = \pm 25 \text{ V}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	100	μA	$V_{DS} = 200 \text{ V}$ , $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2.0	—	3.0	V	$V_{DS} = 10 \text{ V}$ , $I_D = 1 \text{ mA}$
Forward transfer admittance	$ y_{fs} $	0.3	0.5	—	S	$V_{DS} = 10 \text{ V}$ , $I_D = 0.5 \text{ A}^{*1}$
Static drain to source on state resistance	$R_{DS(on)}$	—	5.5	8.0	Ω	$I_D = 0.5 \text{ A}$ , $V_{GS} = 10 \text{ V}^{*1}$
Input capacitance	Ciss	—	60	—	pF	$V_{DS} = 10 \text{ V}$ , $V_{GS} = 0$ ,
Output capacitance	Coss	—	30	—	pF	$f = 1 \text{ MHz}$
Reverse transfer capacitance	Crss	—	5	—	pF	
Turn-on delay time	$t_{d(on)}$	—	5	—	ns	$V_{GS} = 10 \text{ V}$ , $I_D = 0.5 \text{ A}$ ,
Rise time	$t_r$	—	6	—	ns	$R_L = 60 \Omega$
Turn-off delay time	$t_{d(off)}$	—	10	—	ns	
Fall time	$t_f$	—	4.5	—	ns	
Body to drain diode forward voltage	$V_{DF}$	—	0.96	—	V	$I_F = 1 \text{ A}$ , $V_{GS} = 0$
Body to drain diode reverse recovery time	$t_{rr}$	—	160	—	ns	$I_F = 7 \text{ A}$ , $V_{GS} = 0$ , $di_F/dt = 100 \text{ A}/\mu s$

Note 1. Pulse test

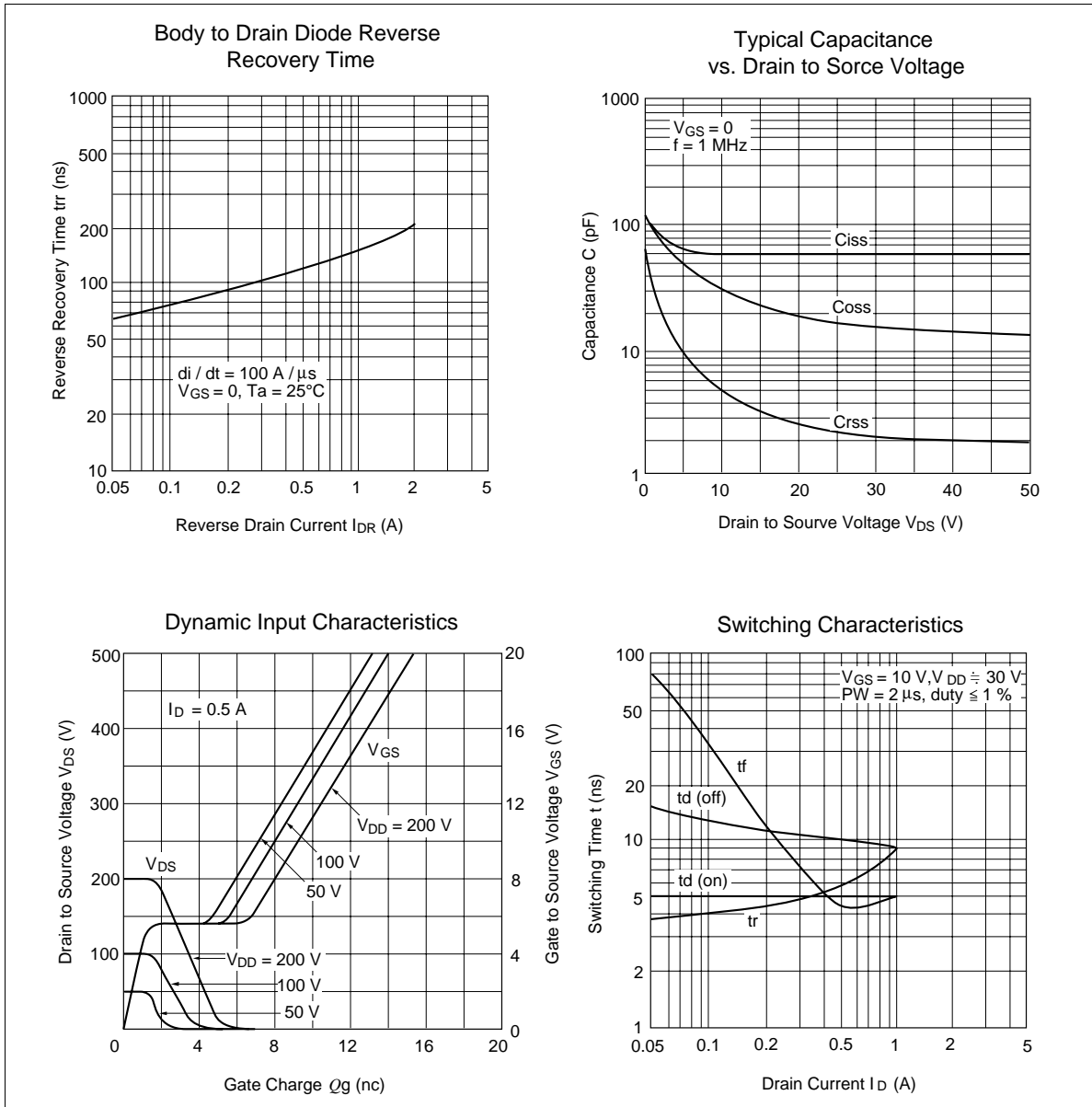
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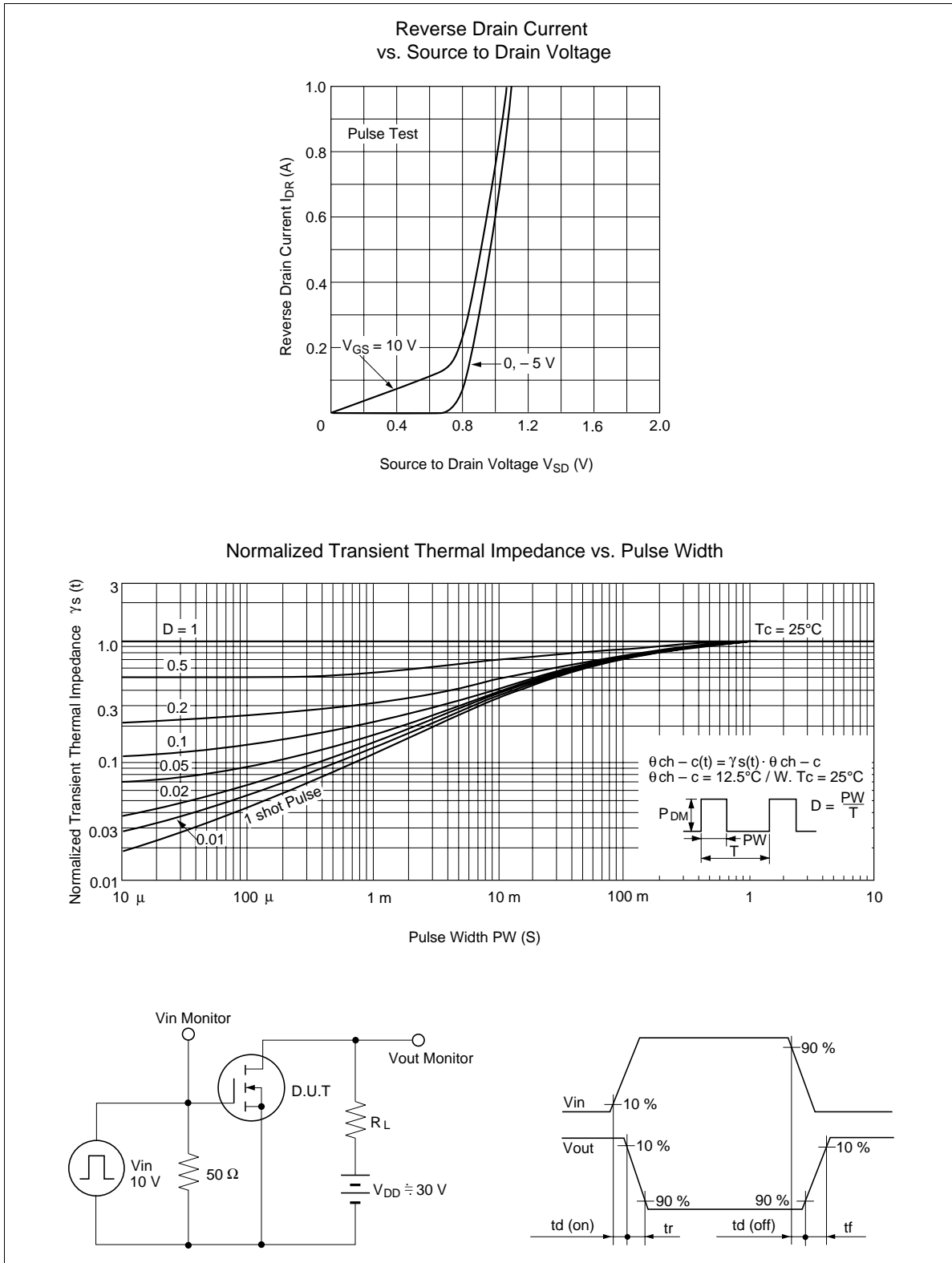
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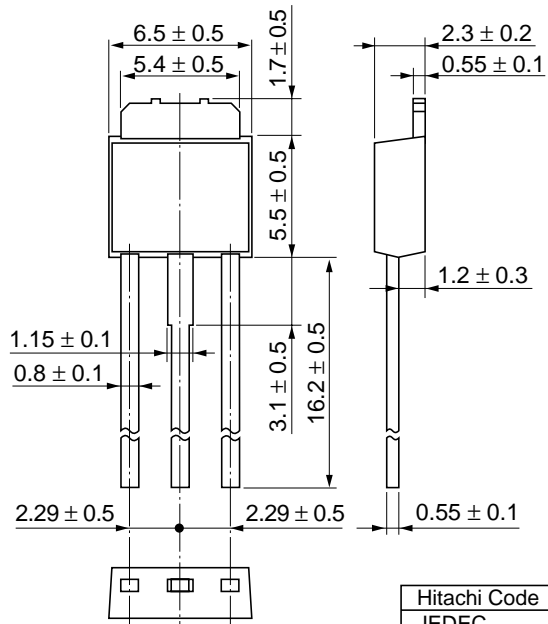
2SK1838(L), 2SK1838(S)



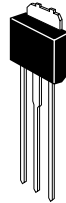
**2SK1838(L), 2SK1838(S)**



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Unit: mm



Hitachi Code	DPAK (L)-(1)
JEDEC	—
EIAJ	Conforms
Weight (reference value)	0.42 g

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