

2SK2553(L), 2SK2553(S)

Silicon N Channel MOS FET
High Speed Power Switching

HITACHI

ADE-208-357H (Z)
9th. Edition
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Application

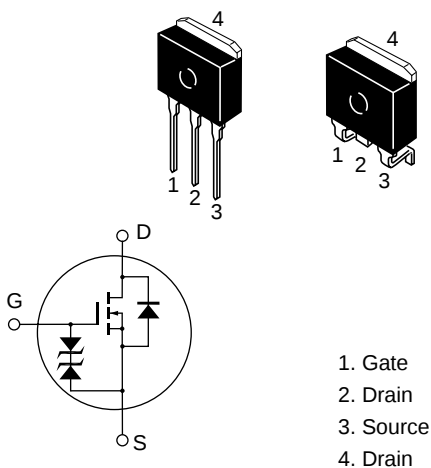
High speed power switching

Features

- Low on-resistance
- $R_{DS(on)} = 7 \text{ m}\Omega$ typ.
- High speed switching
- 4 V gate drive device can be driven from 5 V source

Outline

LDPAK



2SK2553(L), 2SK2553(S)

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V _{DSS}	60	V
Gate to source voltage	V _{GSS}	±20	V
Drain current	I _D	50	A
Drain peak current	I _{D(pulse)} ^{Note 1}	200	A
Body to drain diode reverse drain current	I _{DR}	50	A
Avalanche current	I _{AP} ^{Note 3}	45	A
Avalanche energy	E _{AR} ^{Note 3}	174	mJ
Channel dissipation	P _{ch} ^{Note 2}	75	W
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	−55 to +150	°C

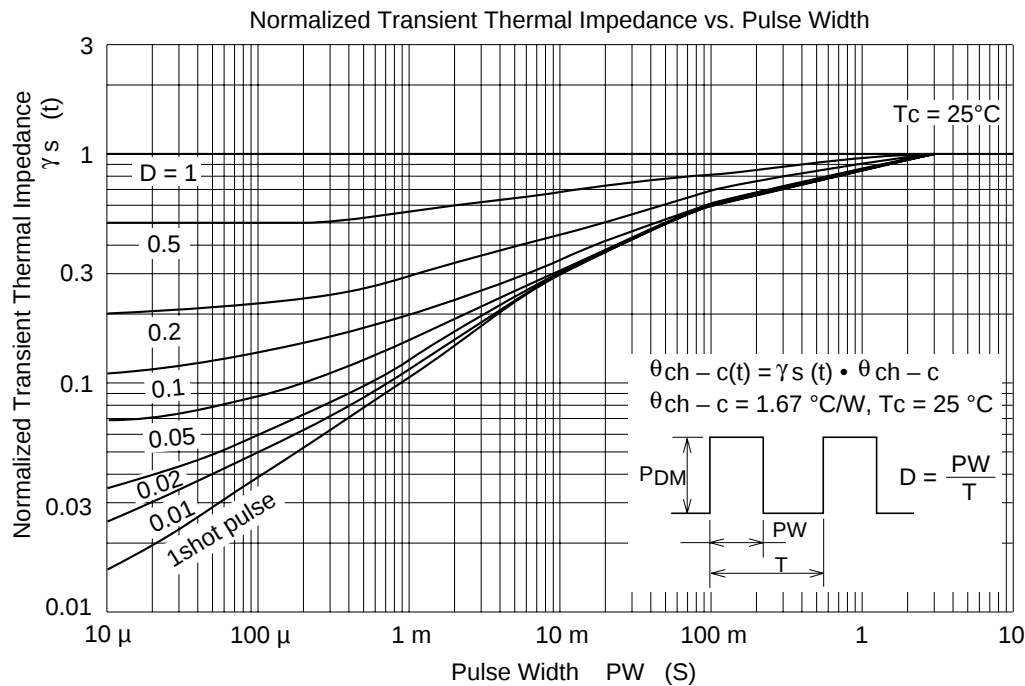
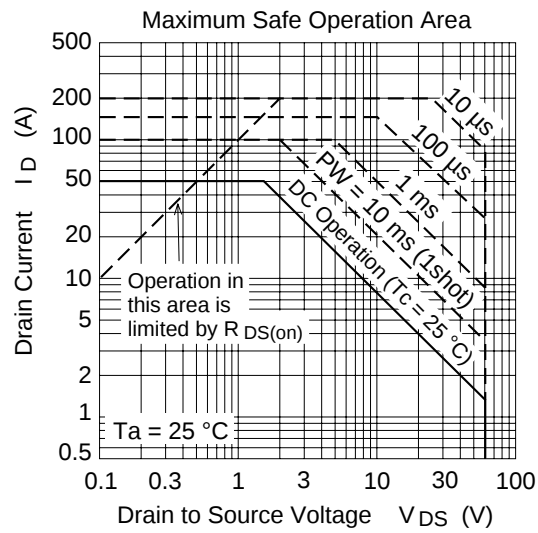
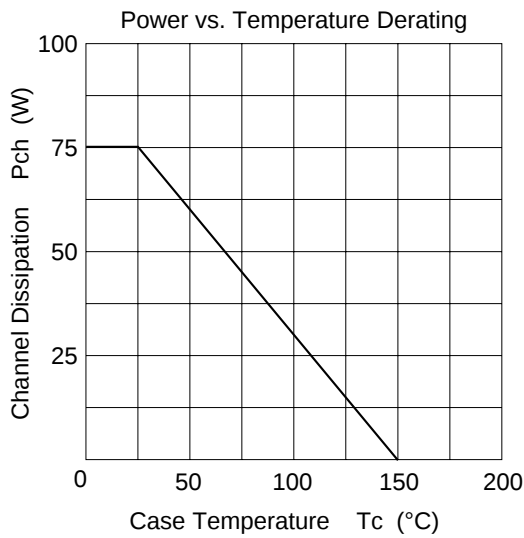
Notes 1. PW ≤ 10 μs, duty cycle ≤ 1 %
 2. Value at Tc = 25 °C
 3. Value at Tch = 25 °C, Rg ≥ 50 Ω

Electrical Characteristics (Ta = 25°C)

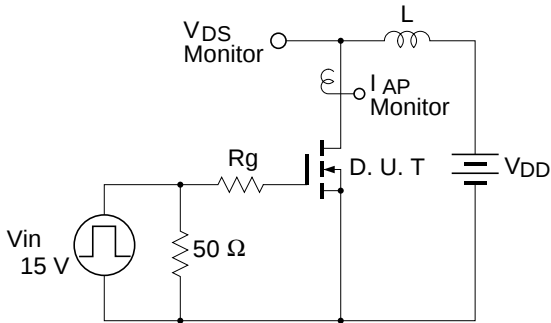
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	60	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	± 20	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$, $V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 16 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	10	μA	$V_{DS} = 60 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.0	V	$I_D = 1 \text{ mA}$, $V_{DS} = 10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	7	10	$\text{m}\Omega$	$I_D = 25 \text{ A}$ $V_{GS} = 10 \text{ V}$ ^{Note 1}
			10	16	$\text{m}\Omega$	$I_D = 25 \text{ A}$ $V_{GS} = 4 \text{ V}$ ^{Note 1}
Forward transfer admittance	$ y_{fs} $	35	55	—	S	$I_D = 25 \text{ A}$ $V_{DS} = 10 \text{ V}$ ^{Note 1}
Input capacitance	C_{iss}	—	3550	—	pF	$V_{DS} = 10 \text{ V}$
Output capacitance	C_{oss}	—	1760	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	500	—	pF	$f = 1 \text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	35	—	ns	$I_D = 25 \text{ A}$
Rise time	t_r	—	230	—	ns	$V_{GS} = 10 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	470	—	ns	$R_L = 1.2 \text{ }\Omega$
Fall time	t_f	—	360	—	ns	
Body to drain diode forward voltage	V_{DF}	—	0.85	—	V	$I_F = 50 \text{ A}$, $V_{GS} = 0$
Body to drain diode reverse recovery time	t_{rr}	—	135	—	ns	$I_F = 50 \text{ A}$, $V_{GS} = 0$ $di_F / dt = 50 \text{ A} / \mu\text{s}$

Note 1. Pulse Test

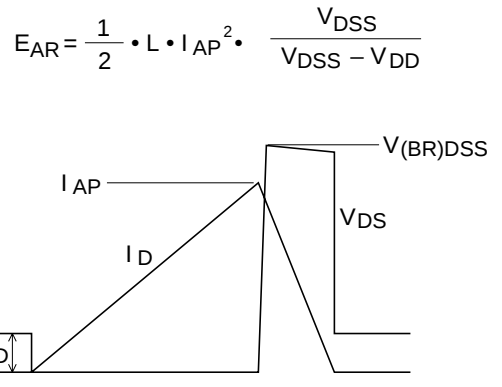
See characteristic curves of 2SK2529.



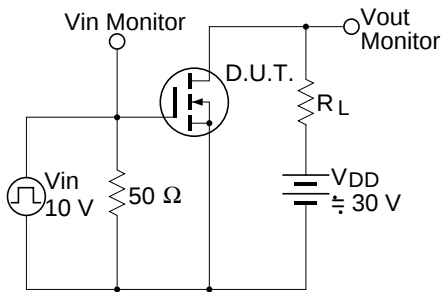
Avalanche Test Circuit



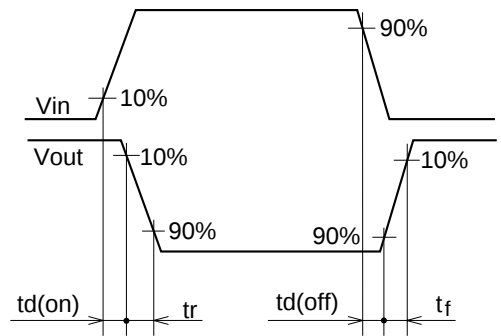
Avalanche Waveform



Switching Time Test Circuit

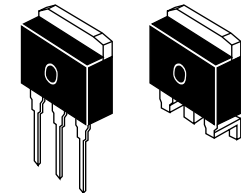
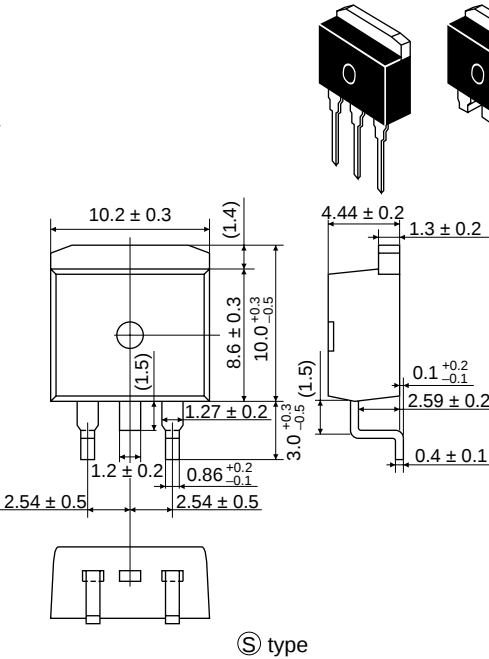
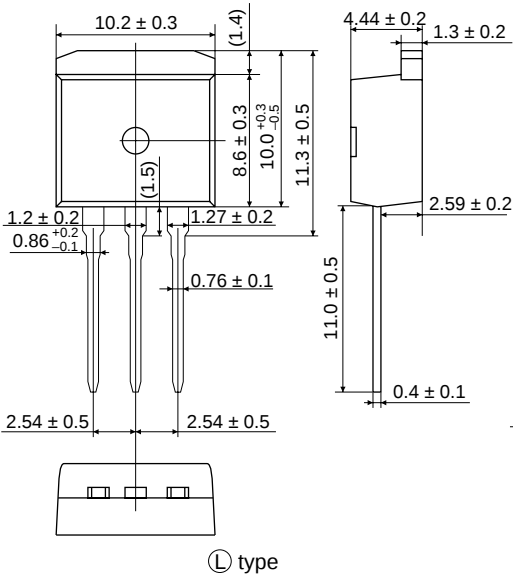


Waveform



Package Dimensions

Unit: mm



Hitachi Code	LDPAK
EIAJ	—
JEDEC	—

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