

2SK1157, 2SK1158

Silicon N-Channel MOS FET

HITACHI

ADE-208-1248 (Z)
1st. Edition
Mar. 2001

Application

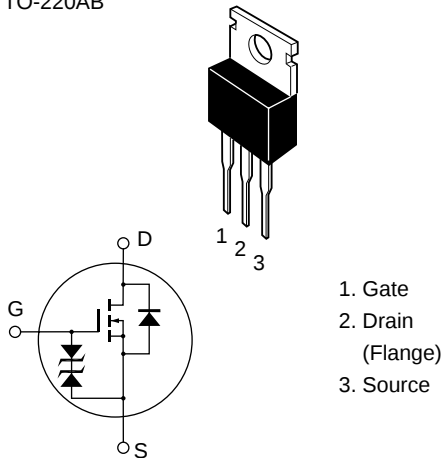
High speed power switching

Features

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

Outline

TO-220AB



2SK1157, 2SK1158

Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	Ratings	Unit
Drain to source voltage	2SK1157	V_{DSS}	450	V
	2SK1158		500	
Gate to source voltage		V_{GSS}	±30	V
Drain current		I_D	7	A
Drain peak current		$I_{D(pulse)}^{*1}$	28	A
Body to drain diode reverse drain current		I_{DR}	7	A
Channel dissipation		P_{ch}^{*2}	60	W
Channel temperature		Tch	150	°C
Storage temperature		Tstg	−55 to +150	°C

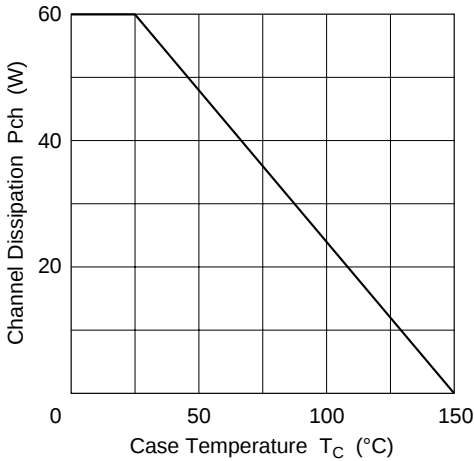
Note: 1. PW 10 μs, duty cycle 1%
2. Value at Tc = 25°C

Electrical Characteristics ($T_a = 25^\circ\text{C}$)

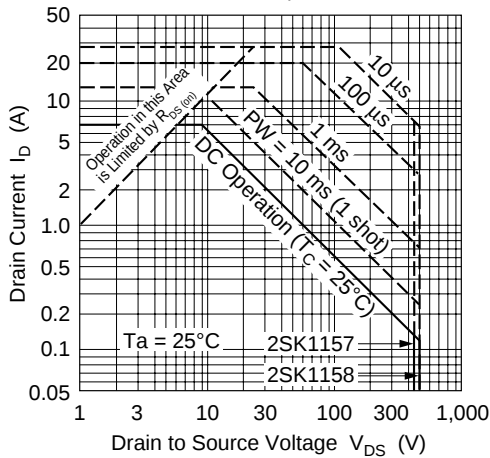
Item		Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	2SK1157 2SK1158	$V_{(BR)DSS}$	450 500	—	—	V	$I_D = 10\text{ mA}$, $V_{GS} = 0$
Gate to source breakdown voltage		$V_{(BR)GSS}$	± 30	—	—	V	$I_G = \pm 100\text{ }\mu\text{A}$, $V_{DS} = 0$
Gate to source leak current		I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 25\text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	2SK1157 2SK1158	I_{DSS}	—	—	250	μA	$V_{DS} = 360\text{ V}$, $V_{GS} = 0$ $V_{DS} = 400\text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage		$V_{GS(off)}$	2.0	—	3.0	V	$I_D = 1\text{ mA}$, $V_{DS} = 10\text{ V}$
Static Drain to source on state resistance	2SK1157 2SK1158	$R_{DS(on)}$	— —	0.6 0.7	0.8 0.9		$I_D = 4\text{ A}$, $V_{GS} = 10\text{ V}^{*1}$
Forward transfer admittance		$ y_{fs} $	4.0	6.5	—	S	$I_D = 4\text{ A}$, $V_{DS} = 10\text{ V}^{*1}$
Input capacitance		C_{iss}	—	1050	—	pF	$V_{DS} = 10\text{ V}$, $V_{GS} = 0$,
Output capacitance		C_{oss}	—	280	—	pF	$f = 1\text{ MHz}$
Reverse transfer capacitance		C_{rss}	—	40	—	pF	
Turn-on delay time		$t_{d(on)}$	—	15	—	ns	$I_D = 4\text{ A}$, $V_{GS} = 10\text{ V}$,
Rise time		t_r	—	55	—	ns	$R_L = 7.5$
Turn-off delay time		$t_{d(off)}$	—	95	—	ns	
Fall time		t_f	—	40	—	ns	
Body to drain diode forward voltage		V_{DF}	—	0.95	—	V	$I_F = 7\text{ A}$, $V_{GS} = 0$
Body to drain diode reverse recovery time		t_{rr}	—	320	—	ns	$I_F = 7\text{ A}$, $V_{GS} = 0$, $di_F/dt = 100\text{ A}/\mu\text{s}$

Note: 1. Pulse test

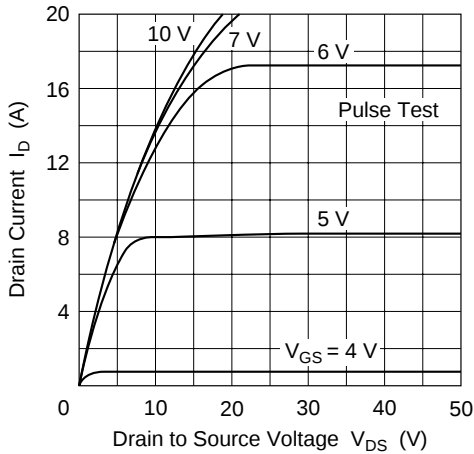
Power vs. Temperature Derating



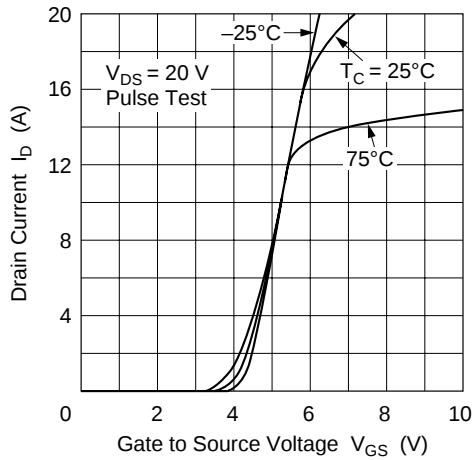
Maximum Safe Operation Area

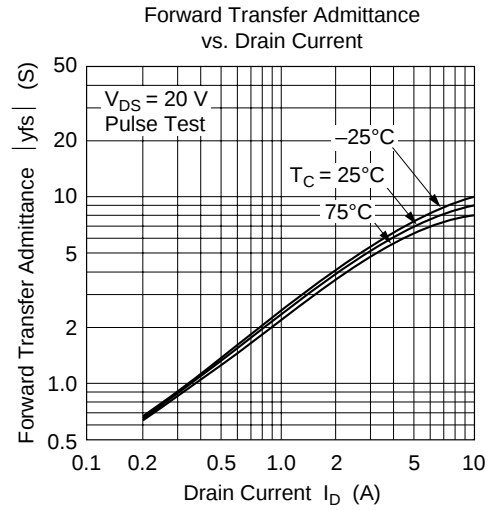
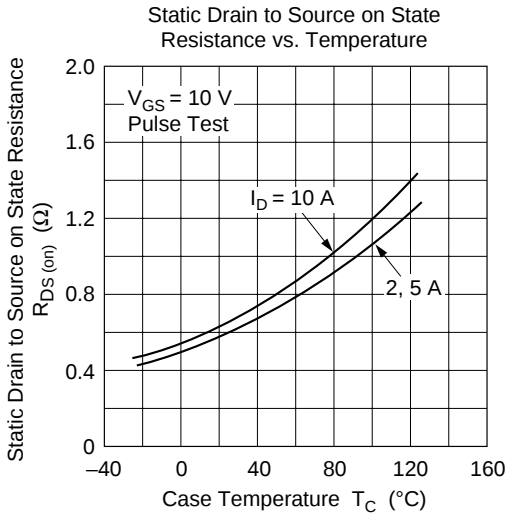
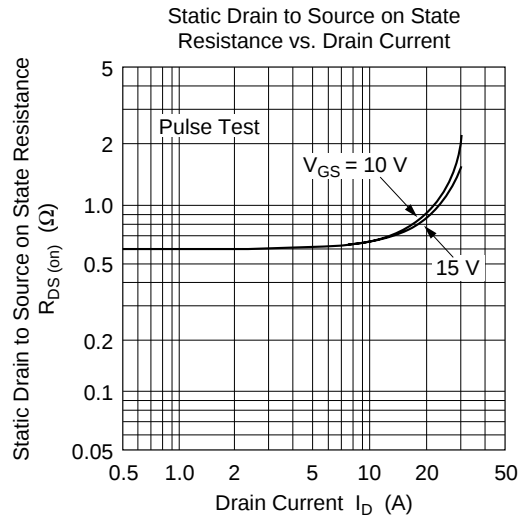
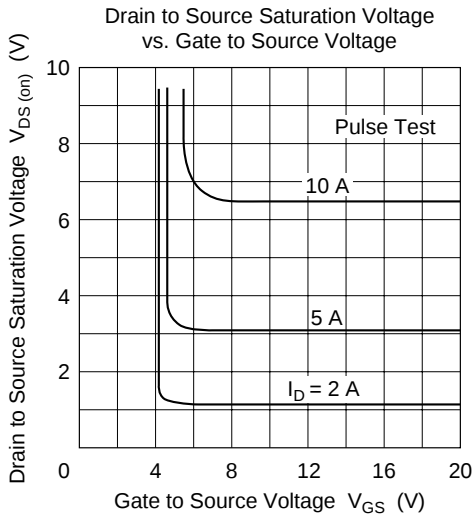


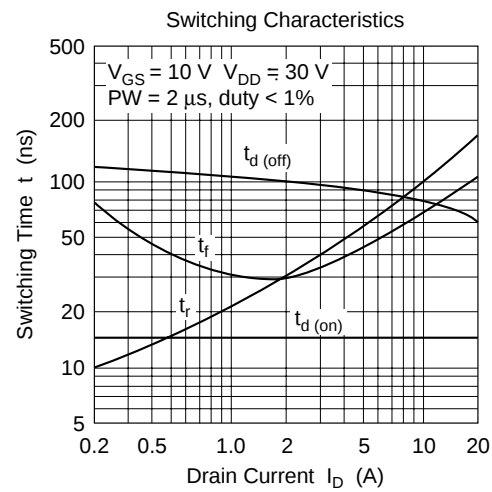
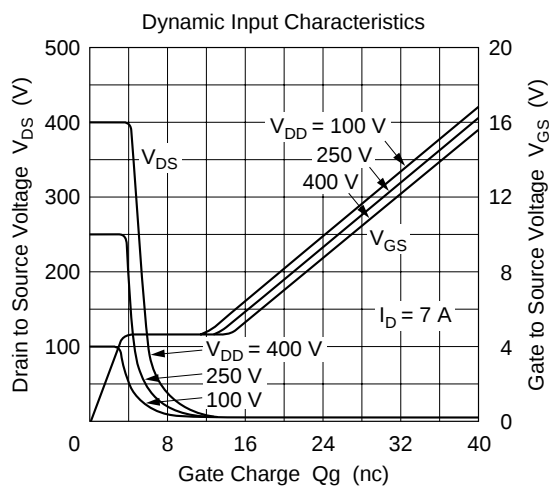
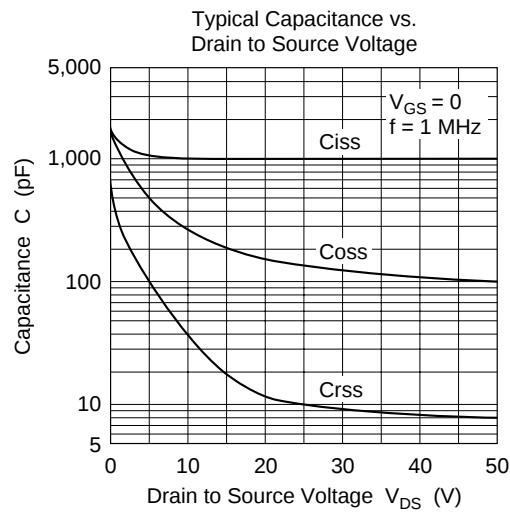
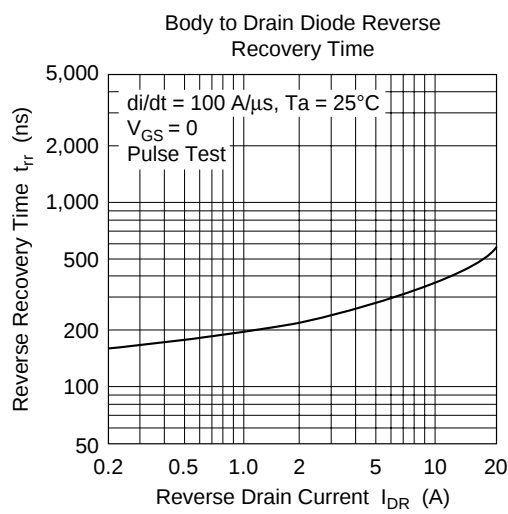
Typical Output Characteristics

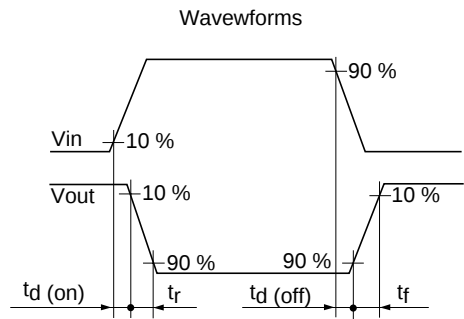
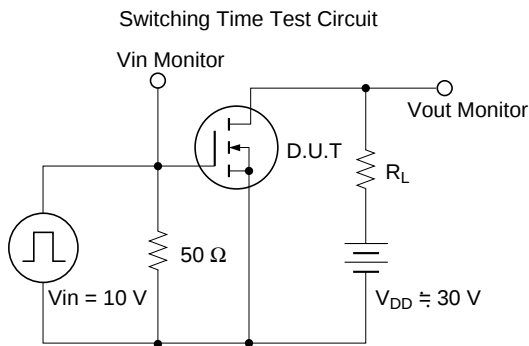
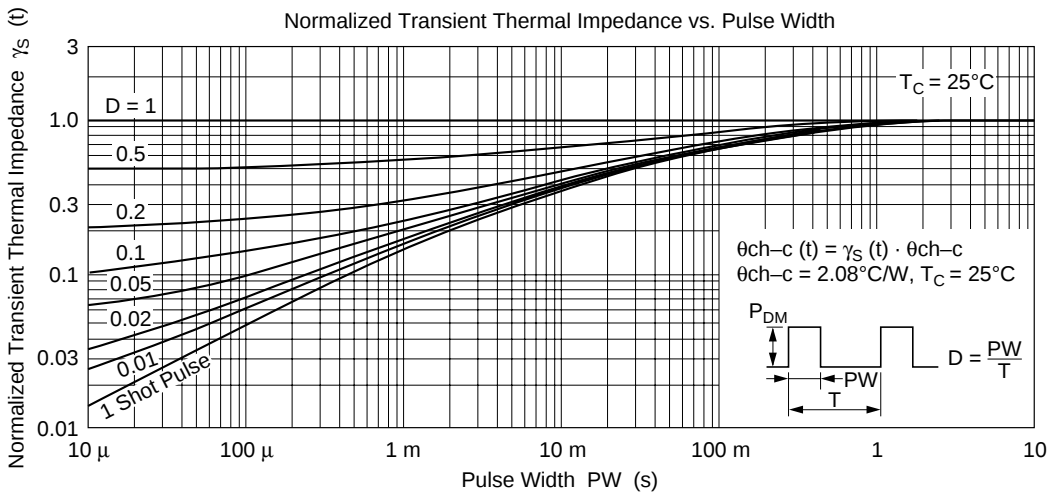
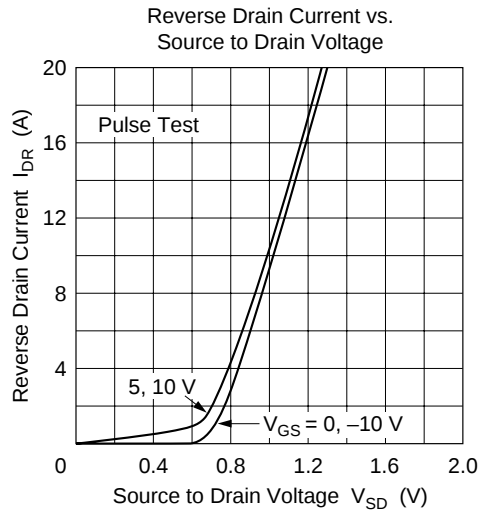


Typical Transfer Characteristics









Package Dimensions

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