

MOS FIELD EFFECT TRANSISTOR

2SK2826

SWITCHING

N-CHANNEL POWER MOS FET

INDUSTRIAL USE

DESCRIPTION

The 2SK2826 is N-Channel MOS Field Effect Transistor designed for high current switching applications.

FEATURES

- Super Low On-state Resistance
 $R_{DS(on)1} = 6.5 \text{ m}\Omega \text{ MAX. (} V_{GS} = 10 \text{ V, } I_D = 35 \text{ A)}$
 $R_{DS(on)2} = 9.7 \text{ m}\Omega \text{ MAX. (} V_{GS} = 4.0 \text{ V, } I_D = 35 \text{ A)}$
- Low C_{iss} : $C_{iss} = 7200 \text{ pF TYP.}$
- Built-in Gate Protection Diode

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

Drain to Source Voltage ($V_{GS} = 0 \text{ V}$)	V_{DSS}	60	V
Gate to Source Voltage ($V_{DS} = 0 \text{ V}$)	$V_{GSS(AC)}$	± 20	V
Gate to Source Voltage ($V_{DS} = 0 \text{ V}$)	$V_{GSS(DC)}$	+20, -10	V
Drain Current (DC) ($T_C = 25^\circ\text{C}$)	$I_{D(DC)}$	± 70	A
Drain Current (pulse) ^{Note1}	$I_{D(pulse)}$	± 280	A
Total Power Dissipation ($T_C = 25^\circ\text{C}$)	P_{T1}	100	W
Total Power Dissipation ($T_A = 25^\circ\text{C}$)	P_{T2}	1.5	W
Channel Temperature	T_{ch}	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to + 150	$^\circ\text{C}$
Single Avalanche Current ^{Note2}	I_{AS}	70	A
Single Avalanche Energy ^{Note2}	E_{AS}	490	mJ

Notes 1. $PW \leq 10 \mu\text{s}$, Duty cycle $\leq 1\%$

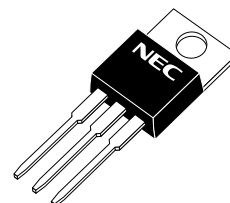
★ **2.** Starting $T_{ch} = 25^\circ\text{C}$, $V_{DD} = 30 \text{ V}$, $R_G = 25 \Omega$, $V_{GS} = 20 \rightarrow 0 \text{ V}$

ORDERING INFORMATION

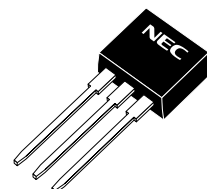
PART NUMBER	PACKAGE
2SK2826	TO-220AB
2SK2826-S	TO-262
2SK2826-ZJ	TO-263
2SK2826-Z	TO-220SMD ^{Note}

★ **Note** TO-220SMD package is produced only in Japan.

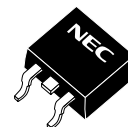
(TO-220AB)



(TO-262)



(TO-263, TO-220SMD)

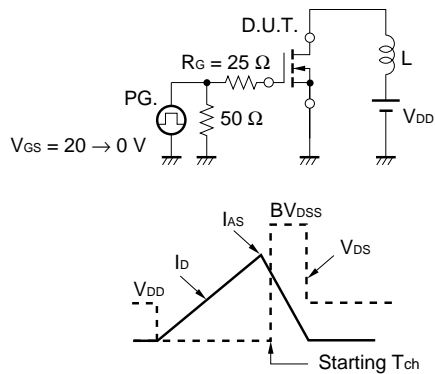


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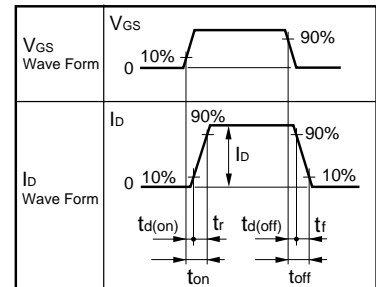
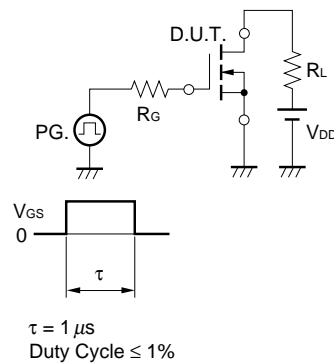
ELECTRICAL CHARACTERISTICS (T_A = 25°C)

CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 60 V, V _{GS} = 0 V			10	μA
Gate Leakage Current	I _{GSS}	V _{GS} = ±20 V, V _{DS} = 0 V			±10	μA
Gate Cut-off Voltage	V _{GS(off)}	V _{DS} = 10 V, I _D = 1 mA	1.0	1.5	2.0	V
Forward Transfer Admittance	y _{fs}	V _{DS} = 10 V, I _D = 35 A	20	94		S
Drain to Source On-state Resistance	R _{DS(on)1}	V _{GS} = 10 V, I _D = 35 A		5.5	6.5	mΩ
	R _{DS(on)2}	V _{GS} = 4.0 V, I _D = 35 A		7.0	9.7	mΩ
Input Capacitance	C _{iss}	V _{DS} = 10 V		7200		pF
Output Capacitance	C _{oss}	V _{GS} = 0 V		2000		pF
Reverse Transfer Capacitance	C _{rss}	f = 1 MHz		700		pF
Turn-on Delay Time	t _{d(on)}	I _D = 35 A		100		ns
Rise Time	t _r	V _{GS} = 10 V		1200		ns
Turn-off Delay Time	t _{d(off)}	V _{DD} = 30 V		440		ns
Fall Time	t _f	R _G = 10 Ω		520		ns
Total Gate Charge	Q _G	I _D = 70 A		150		nC
Gate to Source Charge	Q _{GS}	V _{DD} = 48 V		20		nC
Gate to Drain Charge	Q _{GD}	V _{GS} = 10 V		40		nC
Body Diode Forward Voltage	V _{F(S-D)}	I _F = 70 A, V _{GS} = 0 V		0.97		V
Reverse Recovery Time	t _{rr}	I _F = 70 A, V _{GS} = 0 V		80		ns
Reverse Recovery Charge	Q _{rr}	di/dt = 100A/μs		250		nC

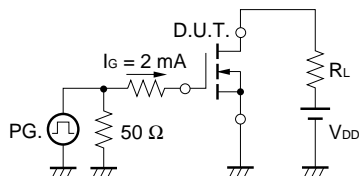
TEST CIRCUIT 1 AVALANCHE CAPABILITY



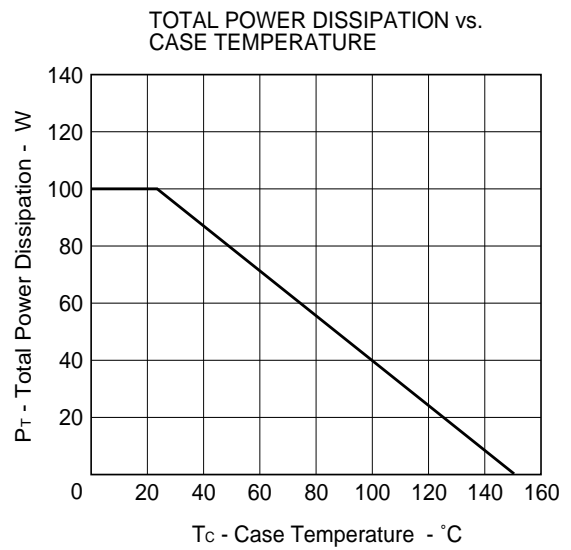
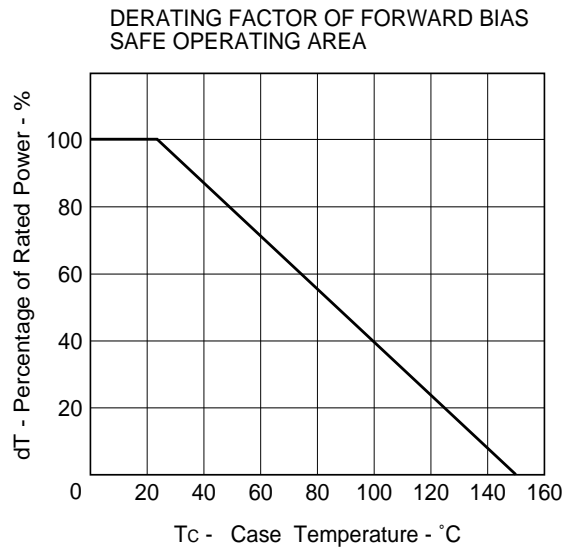
TEST CIRCUIT 2 SWITCHING TIME



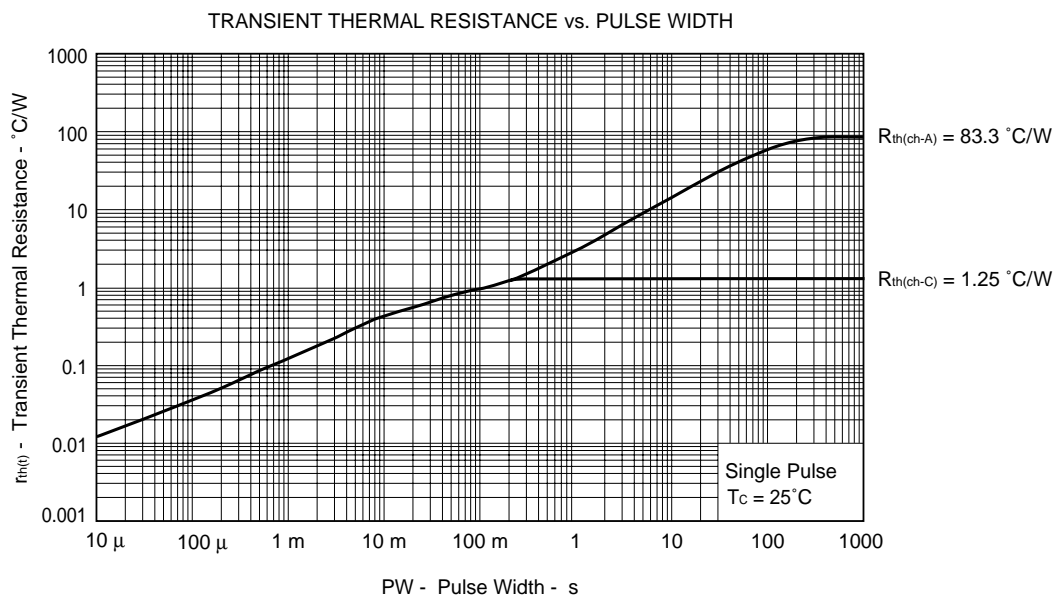
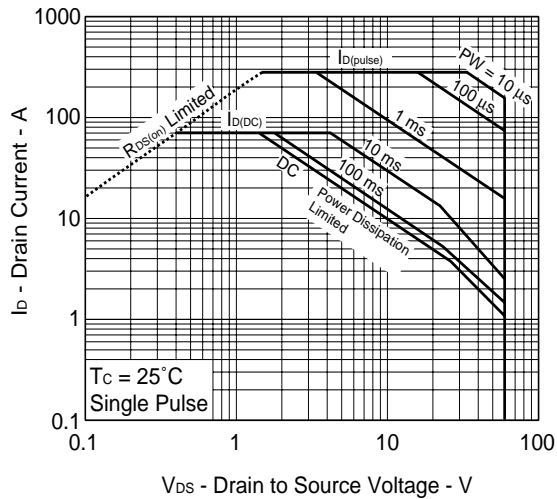
TEST CIRCUIT 3 GATE CHARGE



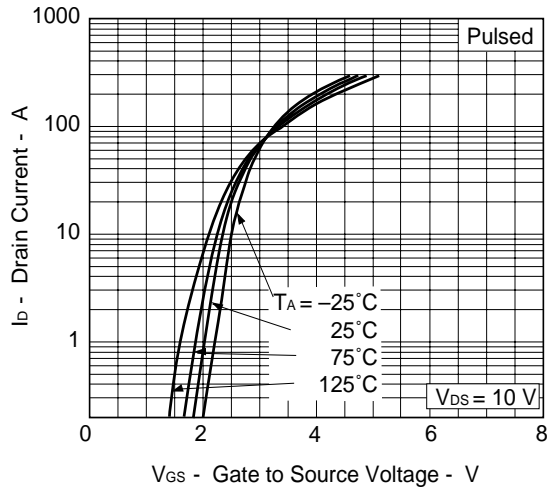
TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)



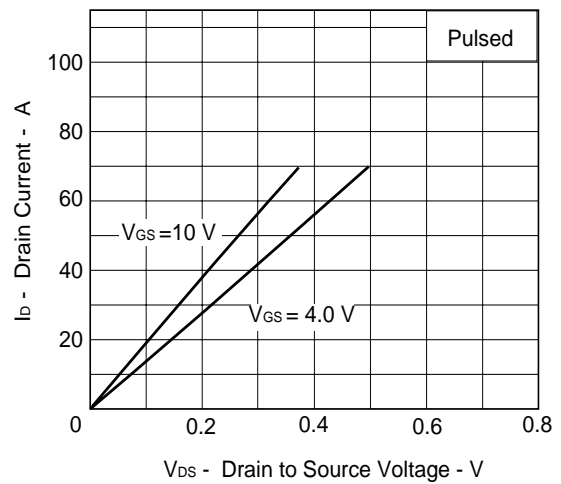
★ FORWARD BIAS SAFE OPERATING AREA



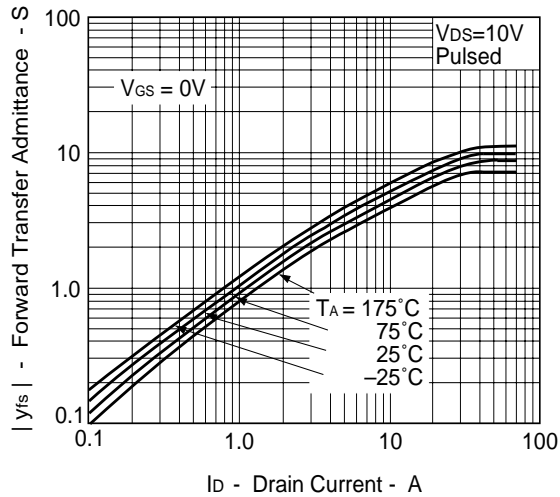
FORWARD TRANSFER CHARACTERISTICS



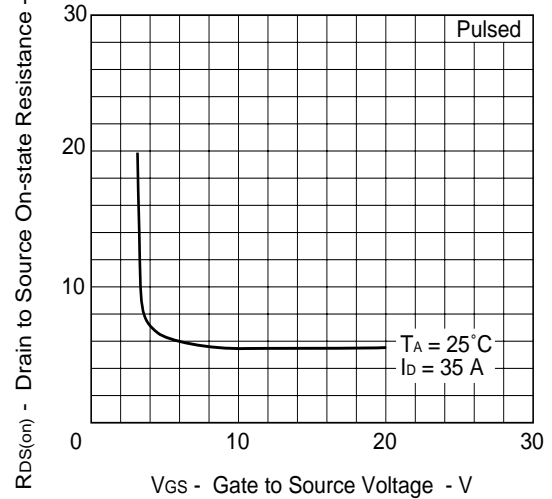
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



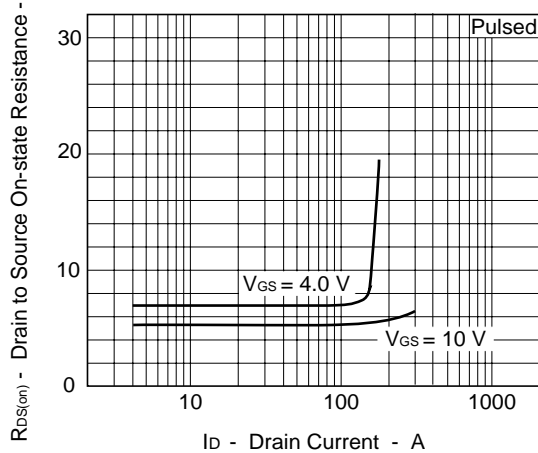
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



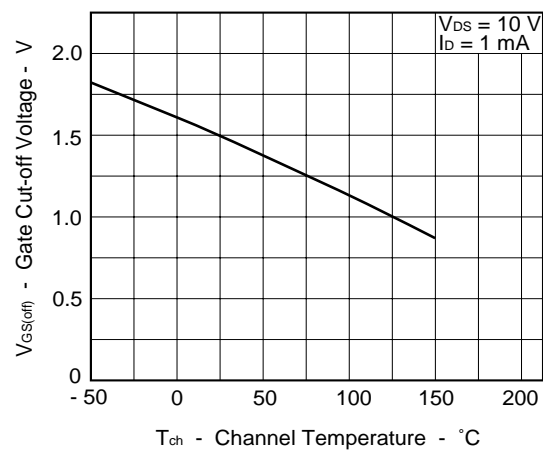
DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



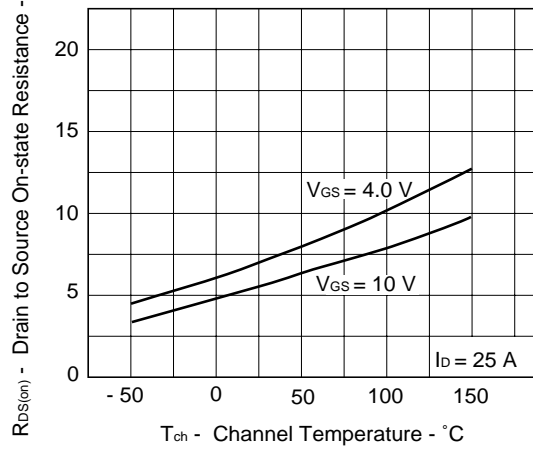
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



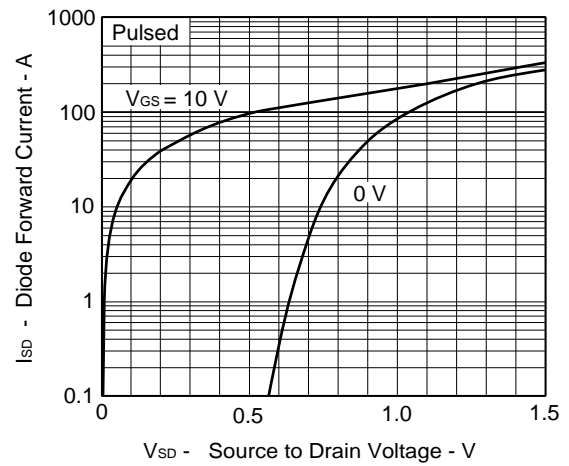
GATE CUT-OFF VOLTAGE vs. CHANNEL TEMPERATURE



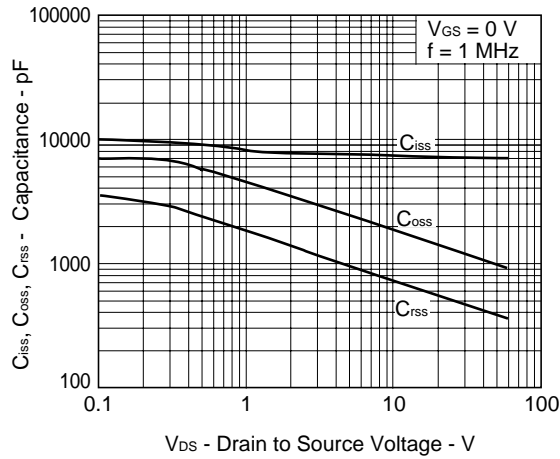
DRAIN TO SOURCE ON-STATE RESISTANCE vs. CHANNEL TEMPERATURE



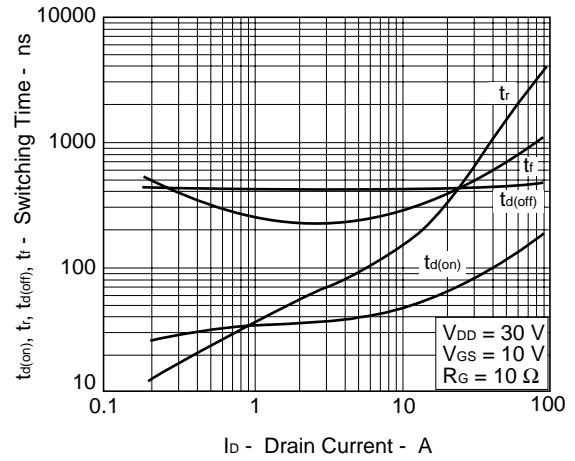
★ SOURCE TO DRAIN DIODE FORWARD VOLTAGE



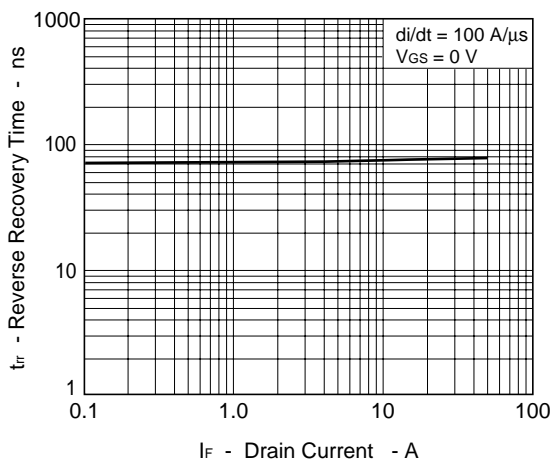
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



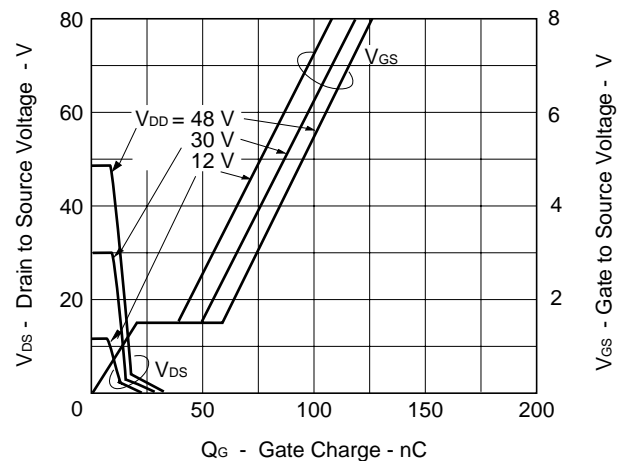
SWITCHING CHARACTERISTICS

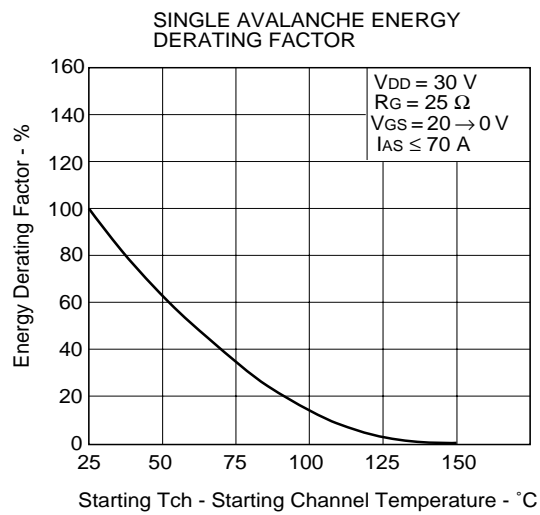
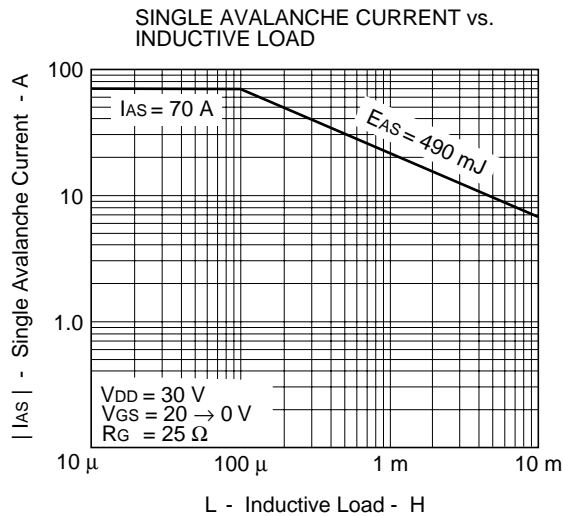


REVERSE RECOVERY TIME vs. DRAIN CURRENT



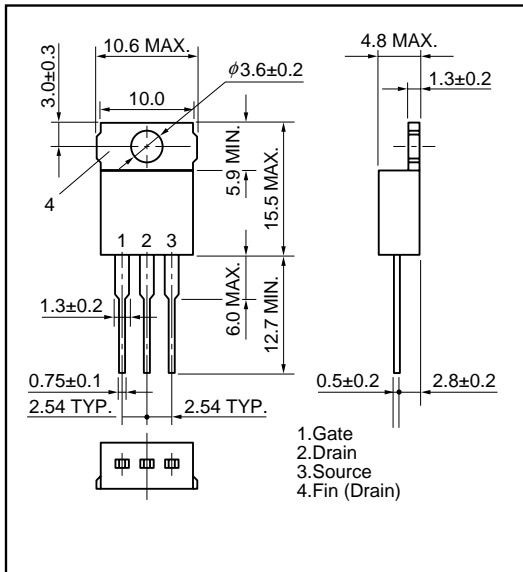
DYNAMIC INPUT/OUTPUT CHARACTERISTICS



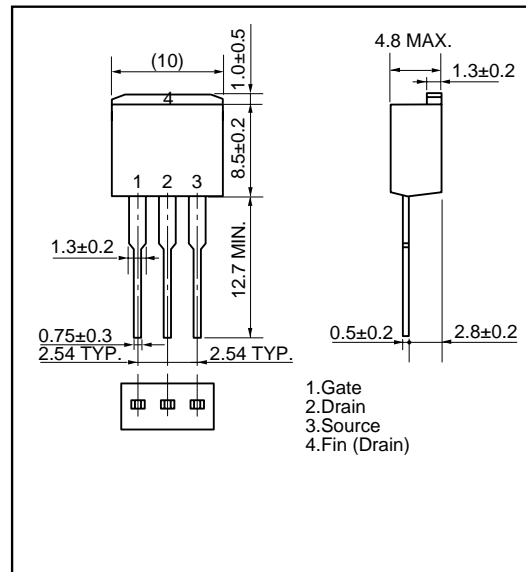


★ PACKAGE DRAWINGS (Unit: mm)

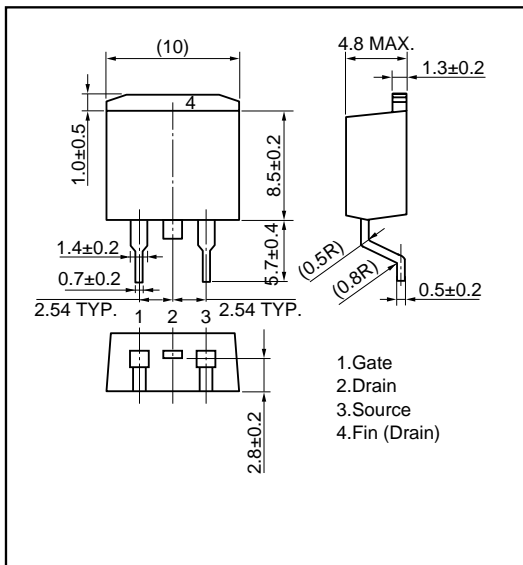
1) TO-220AB(MP-25)



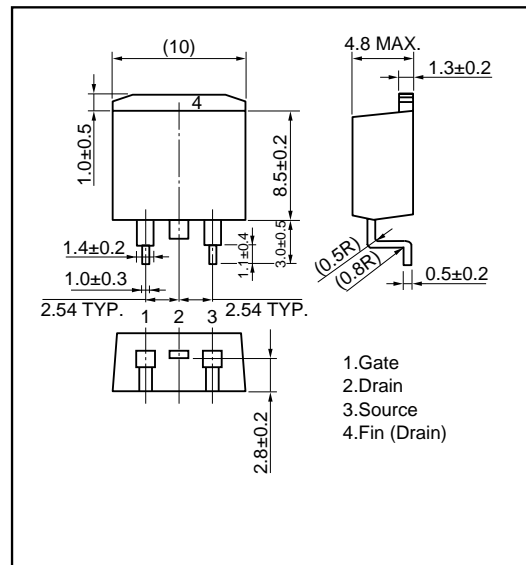
2) TO-262(MP-25 Fin Cut)



3) TO-263 (MP-25ZJ)

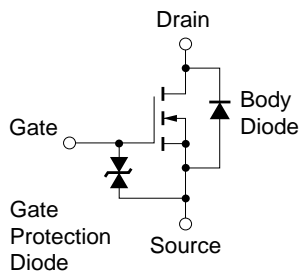


4) TO-220SMD(MP-25Z)^{Note}



Note This package is produced only in Japan.

EQUIVALENT CIRCUIT



Remark The diode connected between the gate and source of the transistor serves as a protector against ESD. When this device actually used, an additional protection circuit is externally required if a voltage exceeding the rated voltage may be applied to this device.

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