

SWITCHING
N-CHANNEL POWER MOS FET
INDUSTRIAL USE

DESCRIPTION

This product is N-Channel MOS Field Effect Transistor designed for high current switching applications.

FEATURES

- Super Low On-State Resistance
 $R_{DS(on)1} = 9m\Omega$ Max. ($V_{GS}=10V, I_D=35A$)
 $R_{DS(on)2} = 14m\Omega$ Max. ($V_{GS}= 4V, I_D=35A$)
- Low C_{iss} $C_{iss} = 5020$ pF Typ.
- Built-in Gate Protection Diode

ABSOLUTE MAXIMUM RATINGS($T_a=25^\circ C$)

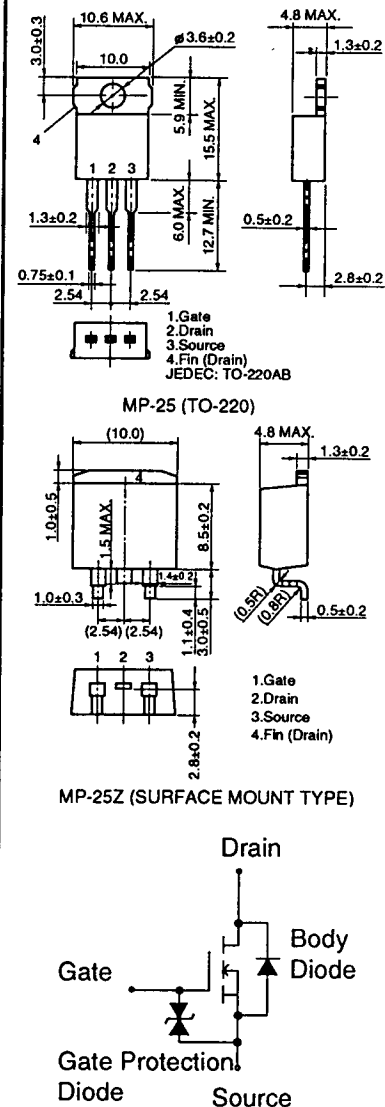
Drain to Source Voltage	V_{DSS}	60	V
Gate to Source Voltage	V_{GSS}	± 20	V
Drain Current(DC)	$I_{D(DC)}$	± 70	A
Drain Current(pulse)*	$I_{D(pulse)}$	± 280	A
Total Power Dissipation($T_c=25^\circ C$)	P_T	100	W
Total Power Dissipation($T_a=25^\circ C$)	P_T	1.5	W
Channel Temperature	T_{ch}	150	$^\circ C$
Storage Temperature	T_{stg}	-55 ~ +150	$^\circ C$

* $PW \leq 10\mu s$, Duty Cycle $\leq 1\%$

THERMAL RESISTANCE

Channel to Case	$R_{th(ch-c)}$	1.25	$^\circ C/W$
Channel to Ambient	$R_{th(ch-a)}$	83.3	$^\circ C/W$

PACKAGE DIMENSIONS
(in millimeter)



The diode connected between the gate and source of the transistor serves as a protector against ESD.

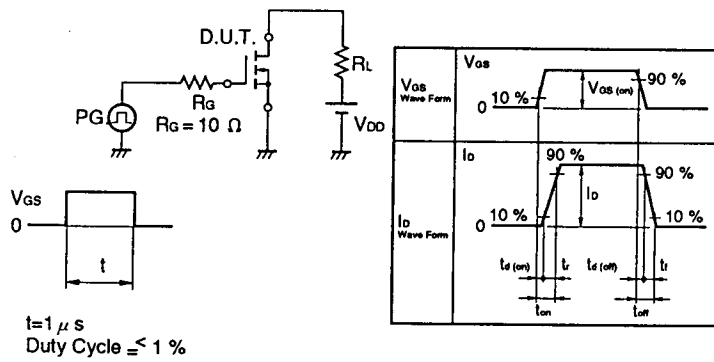
When this device acutally used, an additional protection circiut is externally required if a voltage exceeding the rated voltage may be applied to this device.

This information in this document is being issued in advance of the production cycle for the device. The parameter for the device may change before final production or NEC Corporation, at its own discretion, may withdraw the device prior to its production.

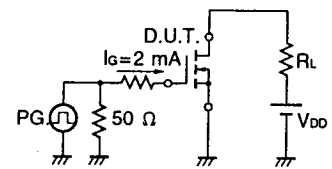
ELECTRICAL CHARACTERISTICS(Ta=25°C)

CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Drain to Source On-state Resistance	$R_{DS(on)1}$	$V_{GS}=10V, I_D=35A$		6.3	9.0	mΩ
	$R_{DS(on)2}$	$V_{GS}=4V, I_D=35A$		9.6	14	mΩ
Gate to Source Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	1.0	1.5	2.0	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=35A$	20	75		S
Drain Leakage Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0$			10	μA
Gate to Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0$			±10	μA
Input Capacitance	C_{iss}	$V_{DS}=10V$		5020		pF
Output Capacitance	C_{oss}	$V_{GS}=0$		1300		pF
Reverse Transfer Capacitance	C_{rss}	$f=1MHz$		460		pF
Turn-On Delay Time	$t_{d(on)}$	$I_D=35A$		60		nS
Rise Time	t_r	$V_{GS(on)}=10V$		750		nS
Turn-Off Delay Time	$t_{d(off)}$	$V_{DD}=30V$		330		nS
Fall Time	t_f	$R_G=10\Omega$		410		nS
Total Gate Charge	Q_G	$I_D=70A$		90		nC
Gate to Source Charge	Q_{GS}	$V_{DD}=48V$		10		nC
Gate to Drain Charge	Q_{GD}	$V_{GS}=10V$		30		nC
Body Diode Forward Voltage	$V_{F(S-D)}$	$I_F=70A, V_{GS}=0$		1.1		V
Reverse Recovery Time	t_{rr}	$I_F=70A, V_{GS}=0$		90		ns
Reverse Recovery Charge	Q_{rr}	$di/dt=100A/\mu s$		20		nC

Test Circuit 1 Switching Time



Test Circuit 2 Gate Charge



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Special: Transportation equipment (automobiles, trains, ships, etc.), traffic control systems, anti-disaster systems, anti-crime systems, safety equipment and medical equipment (not specifically designed for life support)

Specific: Aircrafts, aerospace equipment, submersible repeaters, nuclear reactor control systems, life support systems or medical equipment for life support, etc.

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Anti-radioactive design is not implemented in this product.