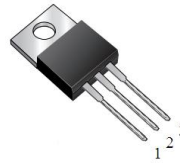
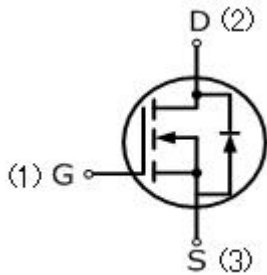


40N10(F,B,H)

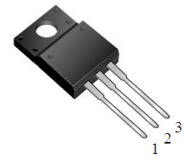
40A mps, 100 Volts N-CHANNEL MOSFET

FEATURE

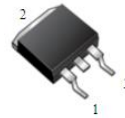
- 40A, 100V, $R_{DS(ON)}=40m\Omega$ @ $V_{GS}=10V/20A$
- Low gate charge
- Low C_{iss}
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability



TO-220AB
40N10



ITO-220AB
40N10F



TO-263
40N10B



TO-262
40N10H

Absolute Maximum Ratings ($T_C=25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	40N10	UNIT
Drain-Source Voltage	V_{DSS}	100	V
Gate-Source Voltage	V_{GSS}	± 20	
Continuous Drain Current	I_D	40	A
Pulsed Drain Current (Note 1)	I_{DM}	100	
Single Pulse Avalanche Energy (Note 2)	E_{AS}	500	mJ
Avalanche Current (Note 1)	I_{AR}	40	A
Repetitive Avalanche Energy (Note 1)	E_{AR}	50	mJ
Reverse Diode dV/dt (Note 3)	dv/dt	4.0	V/ns
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$
Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	T_L	260	$^\circ\text{C}$
Mounting Torque	6-32 or M3 screw	10	lbf • in
		1.1	N • m

Thermal Characteristics

Parameter	Symbol	ITO-220	TO-220	TO-262 TO-263	Units
Maximum Junction-to-Case	R_{thJC}	2.5	1.25	1.25	$^\circ\text{C}/\text{W}$
Maximum Power Dissipation	P_D	50	100	100	W

Electrical Characteristics ($T_c=25^\circ\text{C}$, unless otherwise noted)						
Parameter	Symbol	Test Conditions	Mix	Typ	Max	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	100	—	—	V
Breakdown Temperature Coefficient	$\Delta BV_{DSS} / \Delta T_J$	Reference to 25°C , $I_D=250\mu A$	—	0.5	—	$V/^\circ\text{C}$
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V$	—	—	1	μA
Gate-Body Leakage Current, Forward	I_{GSSF}	$V_{GS}=20V, V_{DS}=0V$	—	—	100	nA
Gate-Body Leakage Current, Reverse	I_{GSSR}	$V_{GS}=-20V, V_{DS}=0V$	—	—	-100	nA
On Characteristics						
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2	—	4	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$	—	—	40	$m\Omega$
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V,$ $f=1.0\text{MHz}$	—	680	880	pF
Output Capacitance	C_{oss}		—	75	100	pF
Reverse Transfer Capacitance	C_{rss}		—	3.8	—	pF
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=40V, I_D=40A,$ $R_g=25\Omega$ (Note4,5)	—	17	—	ns
Turn-On Rise Time	t_r		—	30	—	ns
Turn-Off Delay Time	$t_{d(off)}$		—	42	—	ns
Turn-Off Fall Time	t_f		—	20	—	ns
Total Gate Charge	Q_g	$V_{DS}=80V, I_D=40A,$ $V_{GS}=10V,$ (Note4,5)	—	—	300	nC
Gate-Source Charge	Q_{gs}		—	—	150	nC
Gate-Drain Charge	Q_{gd}		—	—	7.5	nC
Drain-Source Body Diode Characteristics and Maximum Ratings						
Continuous Diode Forward Current	I_S		—	—	40	A
Pulsed Diode Forward Current	I_{SM}		—	—	160	A
Diode Forward Voltage	V_{SD}	$I_S=40A, V_{GS}=0V$	—	—	1.5	V
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_S=40A,$	—	575	—	ns
Reverse Recovery Charge	Q_{rr}	$dI_F/dt=100A/\mu s,$ (Note4)	—	3.65	—	μC

Notes

1. Repetitive Rating; pulse width limited by maximum junction temperature.
2. $V_{DD}=20V, L=0.5mH, R_g=25\Omega, I_{AS}=40A, T_J=25^\circ\text{C}$.
3. $I_{SD} \leq I_D, dI/dt=200A/\mu s, V_{DD} \leq BV_{DSS},$ starting $T_J=25^\circ\text{C}$.
4. Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$.
5. Repetitive rating; pulse width limited by maximum junction temperature.