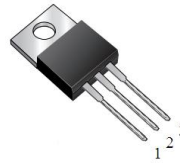
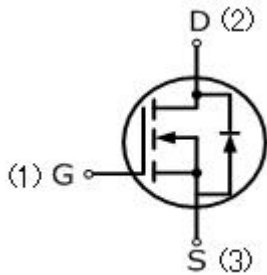


## 50N06(F,B,H)

50A mps,60 Volts N-CHANNEL MOSFET

### FEATURE

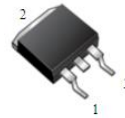
- 50A,60V, $R_{DS(ON)}=16m\Omega @V_{GS}=10V/25A$
- Low gate charge
- Low  $C_{iss}$
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability



TO-220AB  
50N06



ITO-220AB  
50N06F



TO-263  
50N06B



TO-262  
50N06H

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

Parameter	Symbol	50N06	UNIT
Drain-Source Voltage	$V_{DSS}$	60	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	
Continuous Drain Current	$I_D$	52.4	A
Pulsed Drain Current(Note 1)	$I_{DM}$	210	
Single Pulse Avalanche Energy (Note 2)	$E_{AS}$	990	mJ
Avalanche Current(Note 1)	$I_{AR}$	52.4	A
Repetitive Avalanche Energy (Note 1)	$E_{AR}$	12	mJ
Reverse Diode dV/dt (Note 3)	dv/dt	7.0	V/ns
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ C$
Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	$T_L$	260	$^\circ C$
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	$R_{thJC}$	1.66	0.83	0.83	$^\circ C/W$
Maximum Power Dissipation	$P_D$	75	150	150	W

<b>Electrical Characteristics</b> ( $T_c=25^\circ\text{C}$ , unless otherwise noted)						
Parameter	Symbol	Test Conditions	Mix	Typ	Max	Units
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	60	—	—	V
Breakdown Temperature Coefficient	$\Delta BV_{DSS} / \Delta T_J$	Reference to $25^\circ\text{C}$ , $I_D=250\mu A$	—	0.6	—	$V/^\circ\text{C}$
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=60V, V_{GS}=0V$	—	—	1	$\mu A$
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
<b>On Characteristics</b>						
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS}=10V, I_D=250\mu A$	2.0	—	4.0	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=25A$	—	—	16	$m\Omega$
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=25V, V_{GS}=0V,$ $f=1.0\text{MHz}$	—	1250	1630	pF
Output Capacitance	$C_{oss}$		—	445	580	pF
Reverse Transfer Capacitance	$C_{rss}$		—	90	120	pF
<b>Switching Characteristics</b>						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=30V, I_D=50A,$ $R_G=25\Omega$ (Note4,5)	—	20	50	ns
Turn-On Rise Time	$t_r$		—	380	770	ns
Turn-Off Delay Time	$t_{d(off)}$		—	80	170	ns
Turn-Off Fall Time	$t_f$		—	145	300	ns
Total Gate Charge	$Q_g$	$V_{DS}=48V, I_D=50A,$ $V_{GS}=5V$ , (Note4,5)	—	24.5	32	nC
Gate-Source Charge	$Q_{gs}$		—	6	—	nC
Gate-Drain Charge	$Q_{gd}$		—	14.5	—	nC
<b>Drain-Source Body Diode Characteristics and Maximum Ratings</b>						
Continuous Diode Forward Current	$I_S$		—	—	50	A
Pulsed Diode Forward Current	$I_{SM}$		—	—	200	A
Diode Forward Voltage	$V_{SD}$	$I_S=50A, V_{GS}=0V$	—	—	1.5	V
Reverse Recovery Time	$t_{rr}$	$V_{GS}=0V, I_S=50A,$	—	65	—	ns
Reverse Recovery Charge	$Q_{rr}$	$dI_F/dt=100A/\mu s$ , (Note4)	—	125	—	$\mu C$

#### Notes

1. Repetitive Rating: pulse width limited by maximum junction temperature.
2.  $V_{DD}=10V, L=0.8mH, R_G=25\Omega, I_{AS}=50A, T_J=25^\circ\text{C}$ .
3.  $I_{SD} \leq I_D, dI/dt = \_A/\mu s, V_{DD} \leq BV_{DSS}$ , 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.