

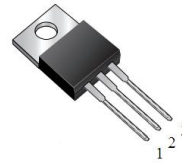
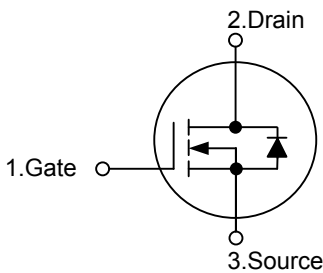
CURRENT 9 Ampere
 VOLTAGE RANG 900 Volts

ASE9N90

FEATURES

- * $R_{DS(ON)} = 1.4\Omega @ V_{GS} = 10V$
- * Ultra Low Gate Charge (Typical 45 nC)
- * Low Reverse Transfer Capacitance ($C_{RSS} =$ Typical 14 pF)
- * Fast Switching Capability
- * Avalanche Energy Specified
- * Improved dv/dt Capability, High Ruggedness

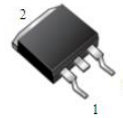
SYMBOL



TO-220AB
9N90



ITO-220AB
9N90F



TO-263
9N90B



TO-262
9N90H

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	900	V
Gate-Source Voltage		V_{GSS}	± 30	V
Continuous Drain Current ($T_C = 25^\circ C$)		I_D	9.0	A
Pulsed Drain Current (Note 2)		I_{DM}	36	A
Avalanche Current (Note 2)		I_{AR}	9.0	A
Avalanche Energy	Single Pulsed(Note 3)	E_{AS}	900	mJ
	Repetitive(Note 2)	E_{AR}	28	mJ
Peak Diode Recovery dv/dt (Note 4)		dv/dt	4.0	V/ns
Power Dissipation	TO-247	P_D	160	W
	TO-3P		240	
	TO-220F1/ TO-220F		49	
	TO-220F2		51	
Linear Derating Factor above $T_C = 25^\circ C$	TO-247		1.28	W/ $^\circ C$
	TO-3P		2.22	
	TO-220F1/ TO-220F		0.392	
	TO-220F2		0.408	
Junction Temperature		T_J	150	$^\circ C$
Storage Temperature		T_{STG}	-55 ~ +150	$^\circ C$

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-247	θ_{JA}	50	$^\circ C/W$
	TO-3P		40	
	TO-220F1/ TO-220F		62.5	
	TO-220F2		62.5	
Junction to Case	TO-247	θ_{JC}	0.78	$^\circ C/W$
	TO-3P		0.52	
	TO-220F1/ TO-220F		2.55	
	TO-220F2		2.45	

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VOLTAGE RANG 900 Volts

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■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0 V, I _D = 250μA	900			V	
Drain-Source Leakage Current	I _{DSS}	V _{DS} = 900 V, V _{GS} = 0 V			10	μA	
Gate-Body Leakage Current	Forward	I _{GSSF} V _{GS} = 30 V, V _{DS} = 0 V			100	nA	
	Reverse	I _{GSSR} V _{GS} = -30 V, V _{DS} = 0 V			-100	nA	
Breakdown Voltage Temperature Coefficient	ΔBV _{DSS} /ΔT _J	I _D =250μA, Referenced to 25°C		0.99		V/°C	
ON CHARACTERISTICS							
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} = V _{GS} , I _D = 250μA	3.0		5.0	V	
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D = 4.5A		1.05	1.4	Ω	
DYNAMIC PARAMETERS							
Input Capacitance	C _{ISS}	V _{DS} = 25 V, V _{GS} = 0 V, f = 1.0 MHz		2100	2730	pF	
Output Capacitance	C _{OSS}				175	230	pF
Reverse Transfer Capacitance	C _{RSS}				14	18	pF
SWITCHING CHARACTERISTICS							
Turn-On Delay Time	t _{D(ON)}	V _{DD} = 450V, I _D = 11.0 A, R _G = 25Ω (Note 1, 2)		50	110	ns	
Turn-On Rise Time	t _R				120	250	ns
Turn-Off Delay Time	t _{D(OFF)}				100	210	ns
Turn-Off Fall Time	t _F			75	160	ns	
Total Gate Charge	Q _G	V _{DS} = 720V, I _D = 11.0A, V _{GS} = 10 V (Note 1,2)		45	58	nC	
Gate-Source Charge	Q _{GS}				13		nC
Gate-Drain Charge	Q _{GD}				18		nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS							
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} = 0 V, I _S = 9.0 A			1.4	V	
Maximum Continuous Drain-Source Diode Forward Current	I _S				9.0	A	
Maximum Pulsed Drain-Source Diode Forward Current	I _{SM}				36	A	
Reverse Recovery Time	t _{rr}	V _{GS} = 0 V, I _S = 9.0 A,		550		ns	
Reverse Recovery Charge	Q _{RR}	d _{IF} / dt = 100 A/μs (Note 1)		6.5		μC	

Notes: 1. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%

2. Essentially independent of operating temperature