

9 Amps, 200Volts

N-CHANNEL MOSFET

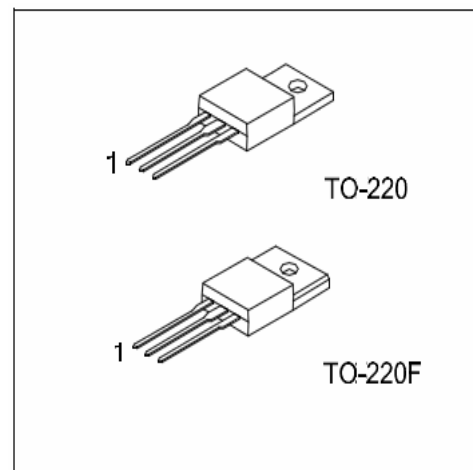
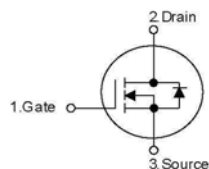
DESCRIPTION

The ET630 N-Channel enhancement mode silicon gate power MOSFET is designed for high voltage, high speed power switching applications such as switching regulators, switching converters, solenoid, motor drivers, relay drivers.

FEATURES

- * $R_{DS(ON)} = 0.4\Omega @ V_{GS} = 10V$
- * Ultra low gate charge (typical 19 nC)
- * Low reverse transfer capacitance ($C_{RSS} =$ typical 80 pF)
- * Fast switching capability
- * Avalanche energy specified
- * Improved dv/dt capability

SYMBOL



ABSOLUTE MAXIMUM RATINGS($T_c=25^\circ\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	PATINGS	UNIT
Drain-Source Voltage		V_{DSS}	200	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	$T_c=25^\circ\text{C}$	I_D	9	A
	$T_c=100^\circ\text{C}$		6.3	A
Drain Current Pulsed		I_{DP}	8.0	A
Avalanche Energy	Repetitive(Note 2)	E_{AR}	9	mJ
	Single Pulse(Note 3)	E_{AS}	150	mJ
Peak Diode Recovery dv/dt(Note 4)		dv/dt	3.5	v/ns
Total Power Dissipation	$T_c=25^\circ\text{C}$	P_D	88	W
	Derate above 25°C		51	W/ $^\circ\text{C}$
Junction Temperature		T_J	+150	$^\circ\text{C}$

Storage Temperature	T_{STG}	-55~+150	°C
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Note:1.Absolute maximum ratings are those values beyond which the device could be permanently damaged

Absolute maximum ratings are stress ratings only and functional device operation is not implied

2.Repetitive Rating:Pulse width limited bu maximum junction temperature

■ THERMAL DATA

PARAMETER	PACKAGE	SYMBOL	RATINGS	UNIT
Thermal Resistance Junction-Ambient	TO-220	θ_{JA}	80	°C/W
	TO-220F		80	
Thermal Resistance Junction-Case	TO-220	θ_{JC}	1.67	
	TO-220F		2.45	

■ ELECTRICAL CHARACTERISTICS ($T_J=25^{\circ}\text{C}$, unless Otherwise specified.)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Off Characteristics							
Drain-Source Breakdown Voltage		BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	200			V
Zero Gate Voltage Drain Current		I_{DSS}	$V_{DS}=200V, V_{GS}=0V$			10	μA
			$V_{DS}=200V, T_C=125^{\circ}\text{C}$			100	μA
Gate-Body Leakage Current	Forward	I_{GSS}	$V_{GS}=20V, V_{DS}=0V$			100	nA
	Reverse		$V_{GS}=-20V, V_{DS}=0V$			-100	nA
Breakdown Voltage Temperature		$\Delta BV_{DSS}/\Delta T_J$	$I_D=250\mu A$		0.1		V/°C
On Characteristics							
Gate Threshold Voltage		$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0		4.0	V
Static Drain-Source On-Resistance		$R_{DS(ON)}$	$V_{DS}=10V, I_D=5A$		0.25	0.4	Ω
Dynamic Characteristics							
Input Capacitance		C_{ISS}	$V_{DS}=25V, V_{GS}=0V, f=1\text{MHz}$		600		pF
Output Capacitance		C_{OSS}			250		pF
Reverse Transfer Capacitance		C_{RSS}			80		pF

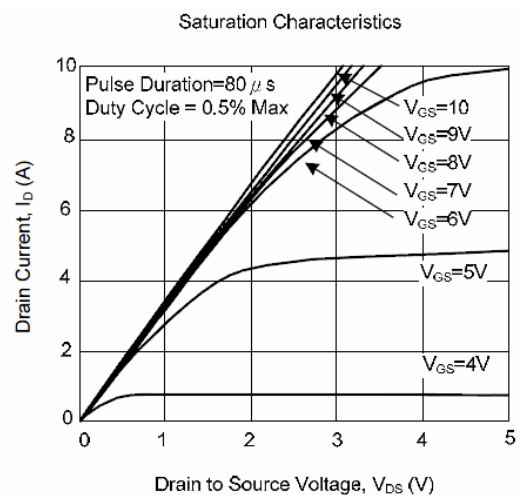
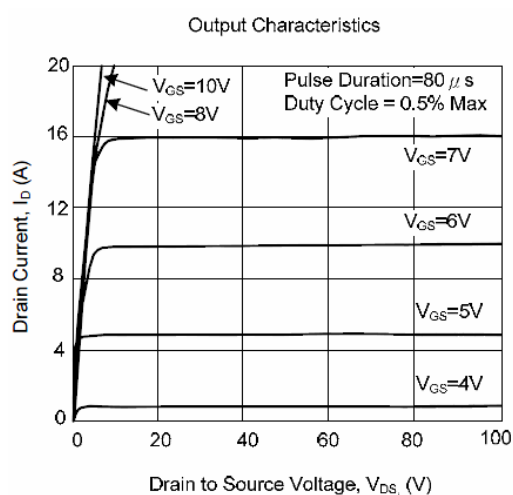
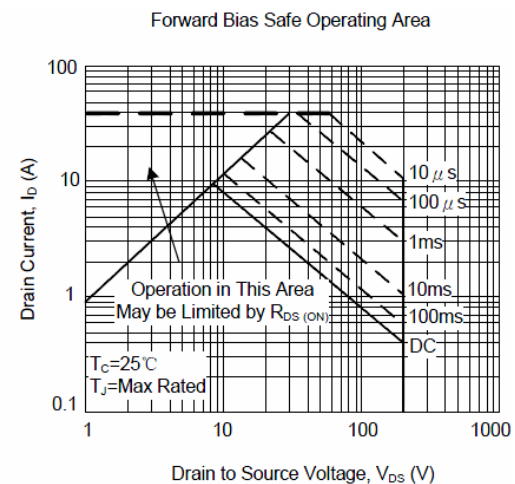
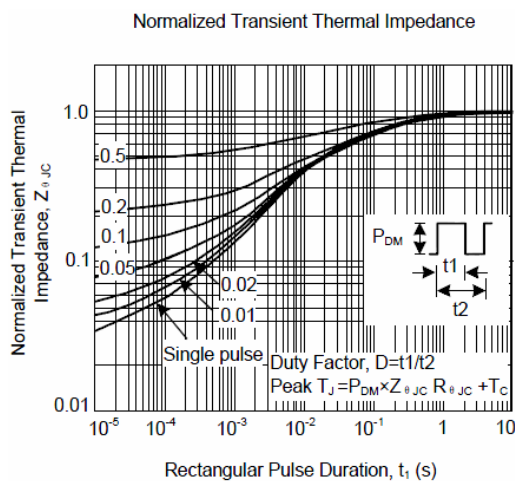
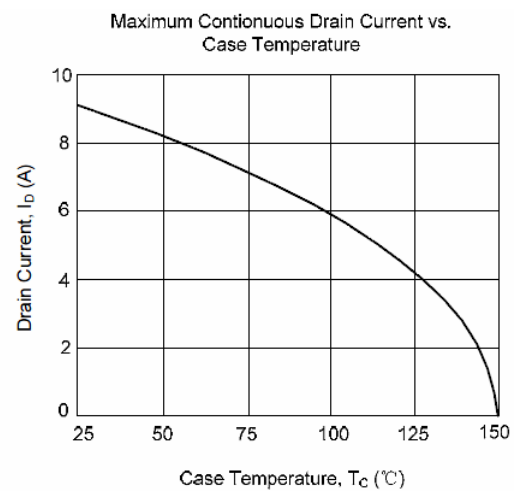
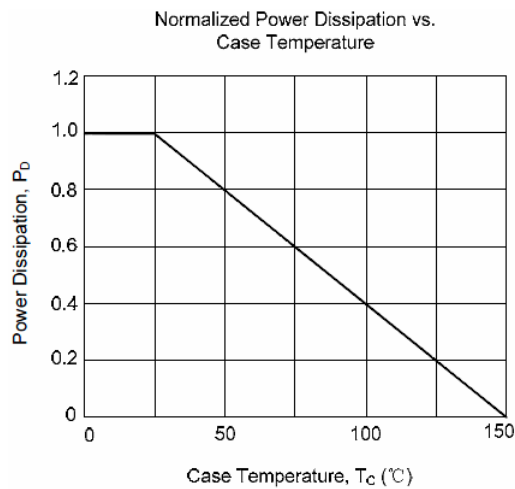
■ ELECTRICAL CHARACTERISTICS(Cont.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Switching Characteristics						
Turn-On Delay Time	t _{D(ON)}	V _{DD} =100V,I _D =9A,R _G =9.1 Ω			30	ns
Rise Time	t _R				50	ns
Turn-Off Delay Time	t _{D(OFF)}				50	ns
Fall Time	t _F				40	ns
Total Gate Charge	Q _G	V _{DS} =160V,V _{GS} =10V,I _D =9A		19	30	nC
Gate-Source Charge	Q _{GS}			10		nC
Gate-Drain Charge	Q _{GD}			9		nC
Drain-Source Diode Characteristics						
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} =0V,I _{SD} =9A			2	V
Continuous Drain-Source Current	I _{SD}				9	A
Pulsed Drain-Source Current	I _{SM}				36	A
Reverse Recovery Time	t _{RR}	I _{SD} =9A,dI _{SD} /dt=100A/ μ s		450		ns
Reverse Recovery Charge	Q _{RR}			3		μ C

Note:1. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

2. Essentially Independent of Operating Temperature

TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS (Cont.)

