

9 Amps, 200Volts

N-CHANNEL MOSFET

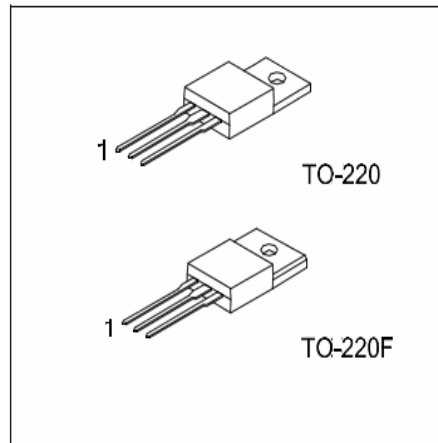
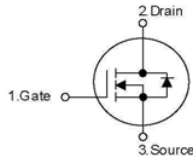
DESCRIPTION

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

- * RDS(ON) = 0.4Ω@VGS = 10 V
- * Ultra low gate charge (typical 19 nC)
- * Low reverse transfer capacitance (CRSS = 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
---------------------	------------------	----------	----

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°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 μA	200			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =200V,V _{GS} =0V			10	μA
		V _{DS} =200V,T _C =125°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
Breakdown Voltage Temperature	$\Delta BV_{DSS}/\Delta T_j$	I _D =250 μA		0.1		V/°C
On Characteristics						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250 μA	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=1MHz		600		pF
Output Capacitance	C _{OSS}			250		pF
Reverse Transfer Capacitance	C _{RSS}			80		pF

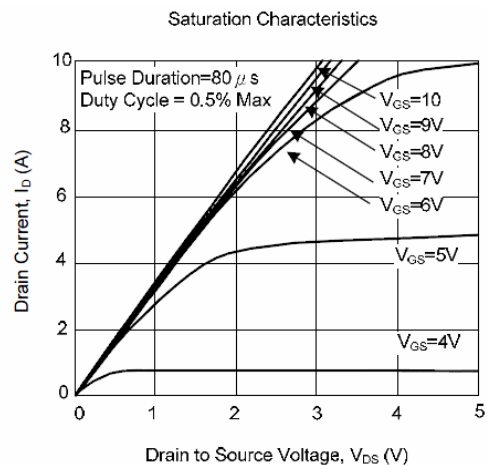
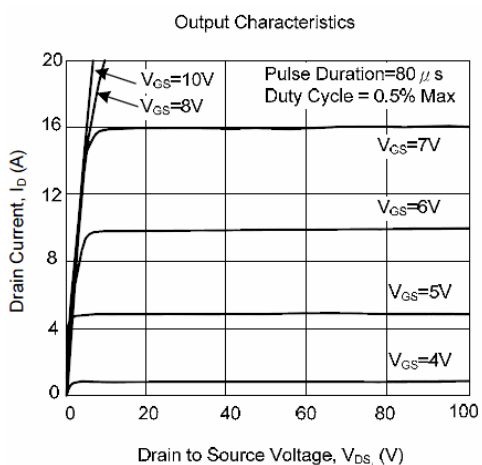
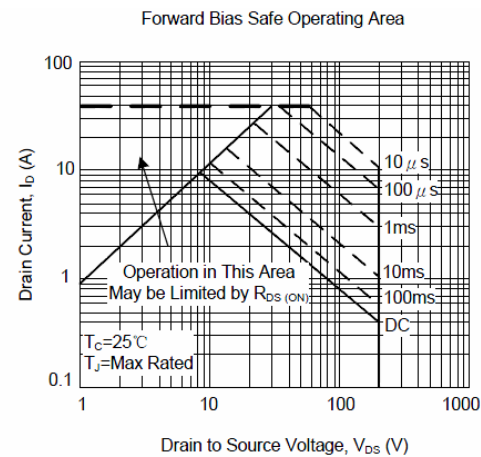
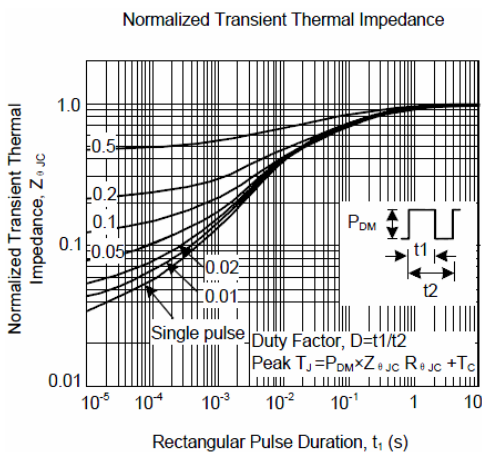
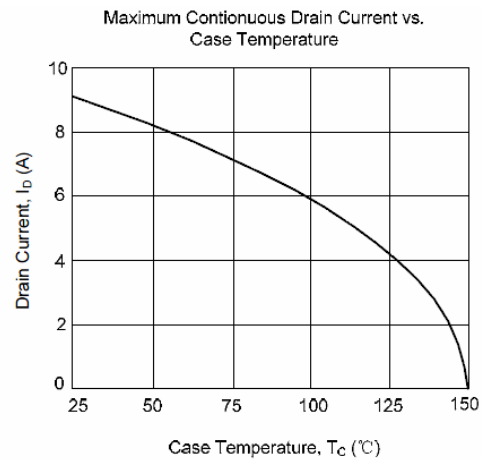
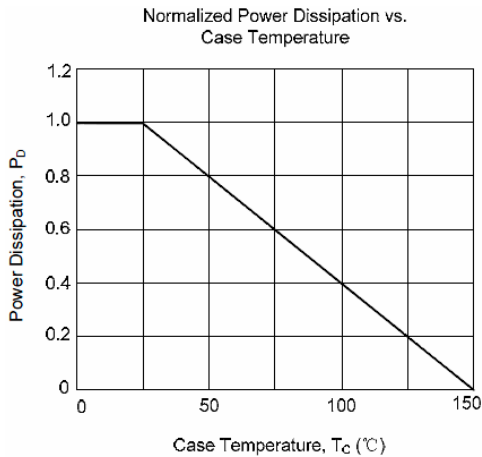
■ ELECTRICAL CHARACTERISTICS(Cont.)

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/μs		450		ns
Reverse Recovery Charge	Q _{RR}			3		μC

Note:1. Pulse Test: Pulse Width≤300 μs, Duty Cycle≤2%

2. Essentially Independent of Operating Temperature

TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)

