

ATM8N80TF

N-Channel Enhancement Mode Power MOSFET

Drain-Source Voltage: 800V Continuous Drain Current: 8A

DESCRIPTION

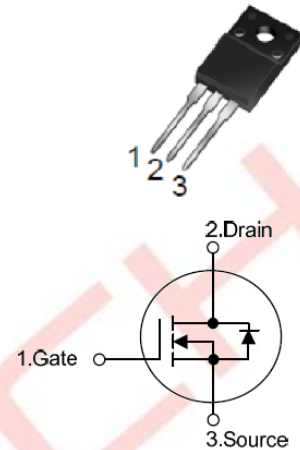
The ATM8N80TF is a N-channel mode power MOSFET, it uses ATs advanced technology to provide costumers planar stripe and DMOS technology. This technology allows a minimum on-state resistance, superior switching performance. It also can withstand high energy pulse in the avalanche and commutation mode.

The ATM8N80TF is generally applied in high efficiency switch mode power supplies.

FEATURES

- ◆ Typically 35 nC Low Gate Charge
- ◆ $R_{DS(ON)} < 1.45\Omega$ @ $V_{GS} = 10V$, $I_D = 4.0A$
- ◆ Typically 13 pF Low C_{RSS}
- ◆ Improved dv/dt Capability
- ◆ Fast Switching Speed
- ◆ 100% Avalanche Tested
- ◆ RoHS-Compliant Product

TO-220F



ABSOLUTE MAXIMUM RATINGS (T_C=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	800	V
Gate-Source Voltage	V_{GSS}	±30	V
Drain Current (Continuous) (T _C =25°C)	I_D	8	A
Drain Current (Pulsed) (Note 1)	I_{DM}	32	A
Avalanche Current (Note 1)	I_{AR}	8	A
Single Pulse Avalanche Energy (Note 3)	E_{AS}	850	mJ
Repetitive Avalanche Energy (Note 1)	E_{AR}	17.8	mJ
Peak Diode Recovery dv/dt (Note 4)	dv/dt	4.5	V/ns
Power Dissipation	TO-220F	59	W
Linear Derating Factor above (T _C =25°C)	TO-220F	0.47	W/°C
Junction Temperature	T_J	+150	°C
Storage Temperature	T_{STG}	-55 ~ +150	°C

Notes: 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 by maximum junction temperature.

3. L = 25mH, $I_{AS} = 8A$, $V_{DD} = 50V$, $R_G = 25\Omega$, Starting $T_J = 25^\circ C$

4. $I_{SD} \leq 8A$, $di/dt \leq 200A/\mu s$, $V_{DD} \leq BV_{DSS}$, Starting $T_J = 25^\circ C$

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

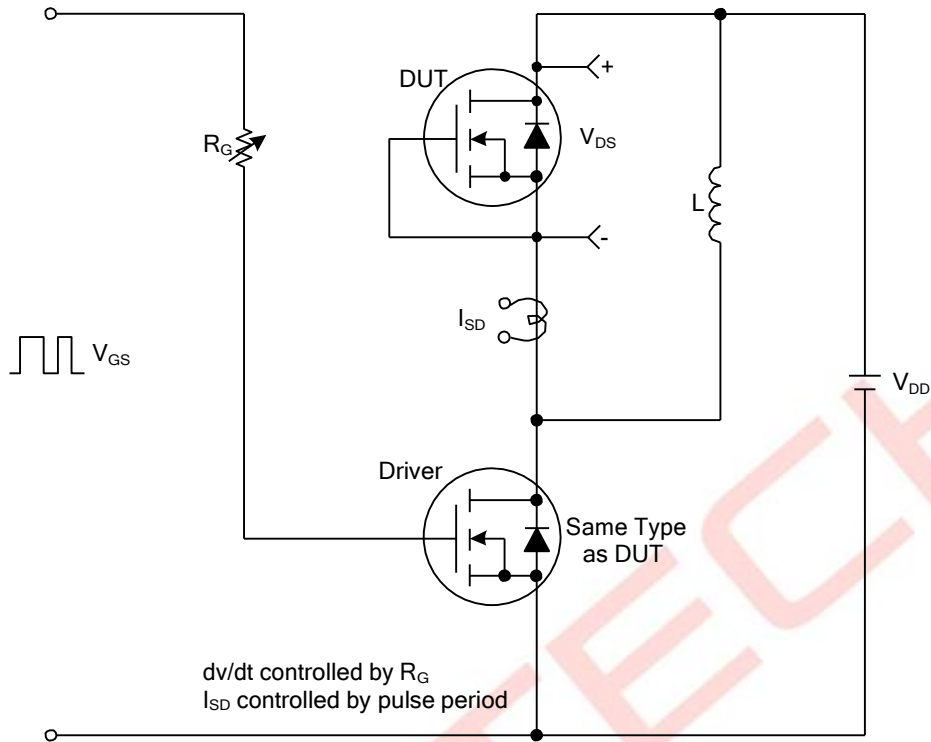
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V	800			V
Breakdown Voltage Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25°C, I _D =250μA		0.5		V/°C
Drain-Source Leakage Current	I _{DSS}	V _{DS} =800V, V _{GS} =0V			10	μA
		V _{DS} =640V, T _C =125°C			100	
Gate- Source Leakage Current	I _{GSS}	V _{GS} =±30V, V _{DS} =0V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	3.0		5.0	V
Static Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =4A		1.18	1.45	Ω
Forward Transconductance (Note 1)	g _{FS}	V _{DS} =50V, I _D =4A		5.6		S
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		1580	2050	pF
Output Capacitance	C _{OSS}			135	175	pF
Reverse Transfer Capacitance	C _{RSS}			13	17	pF
SWITCHING PARAMETERS (Note 1, Note 2)						
Total Gate Charge	Q _G	V _{GS} =10V, V _{DS} =400V, I _D =8A R _L =50Ω		47	60	nC
Gate to Source Charge	Q _{GS}			10		nC
Gate to Drain Charge	Q _{GD}			14		nC
Turn-ON Delay Time	t _{D(ON)}	V _{DD} =400V, I _D =8A, R _G =25Ω		40	90	ns
Rise Time	t _R			110	230	ns
Turn-OFF Delay Time	t _{D(OFF)}			65	140	ns
Fall-Time	t _F			70	150	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Continuous Drain-Source Diode Forward Current	I _S				8	A
Maximum Pulsed Drain-Source Diode Forward Current	I _{SM}				32	A
Drain-Source Diode Forward Voltage	V _{SD}	I _S =8A, V _{GS} =0V			1.4	V
Reverse Recovery Time (Note 1)	t _{rr}	I _S =8A, V _{GS} =0V,		690		ns
Reverse Recovery Charge (Note 1)	Q _{RR}	di/dt=100A/μs		8.2		μC

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

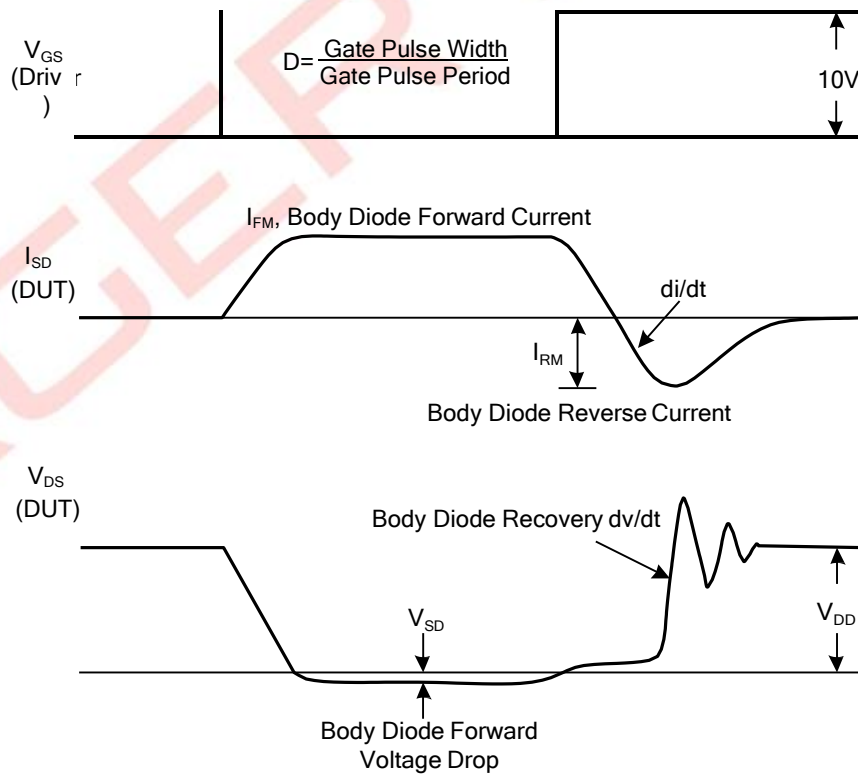
2. Essentially independent of operating temperature

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TEST CIRCUITS AND WAVEFORMS

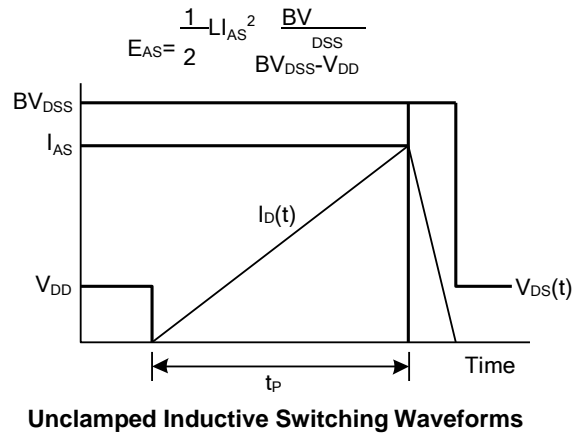
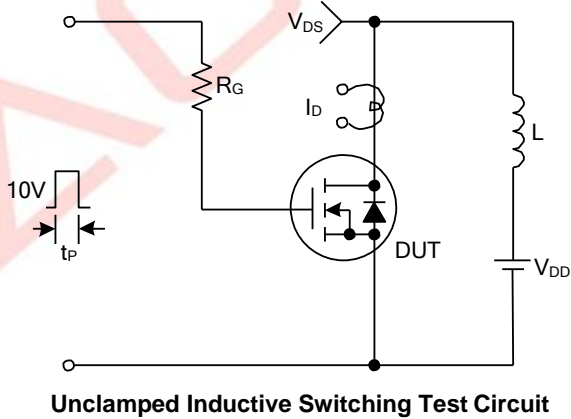
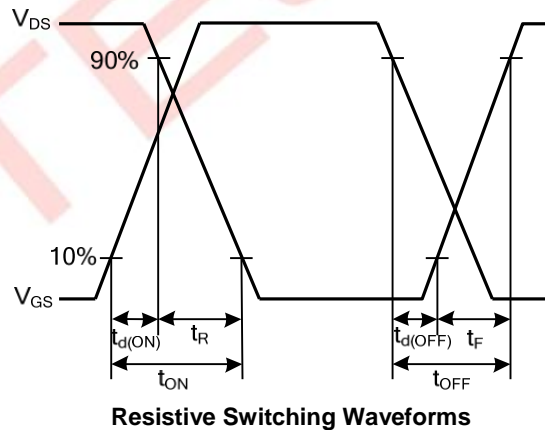
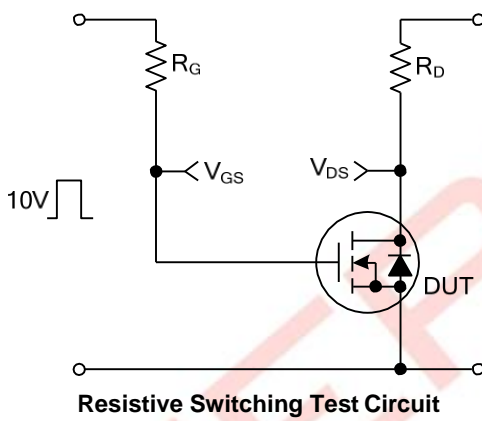
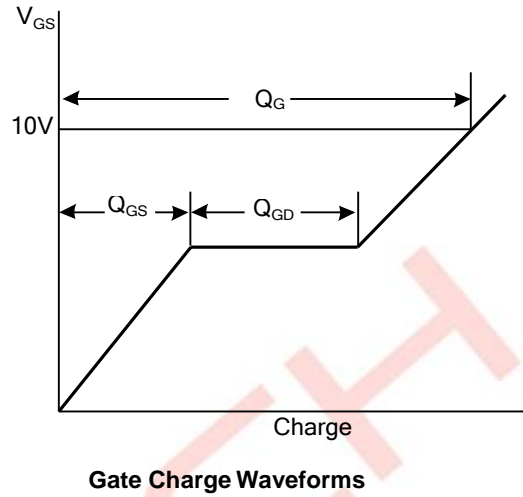
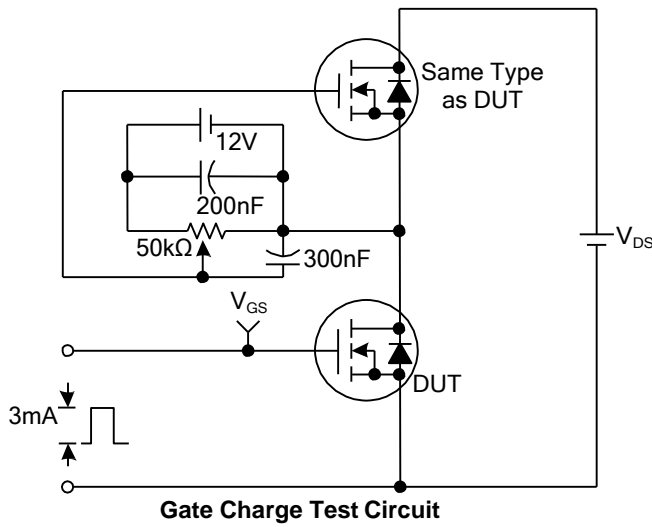


Peak Diode Recovery dv/dt Test Circuit & Waveforms



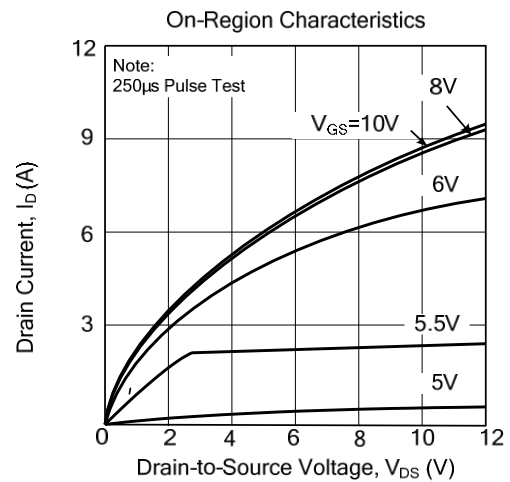
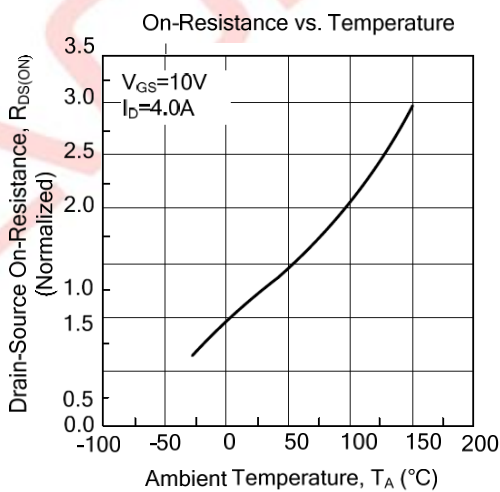
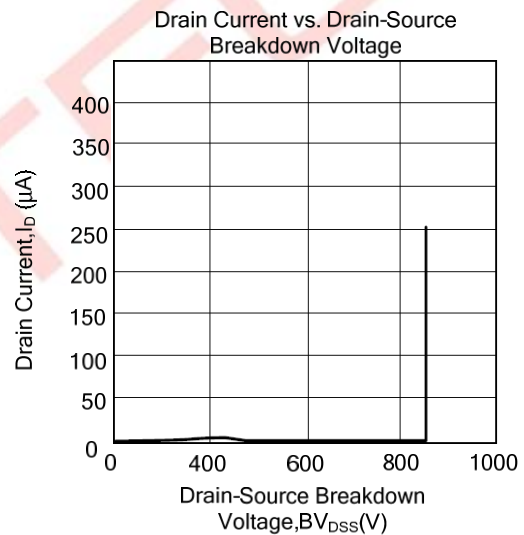
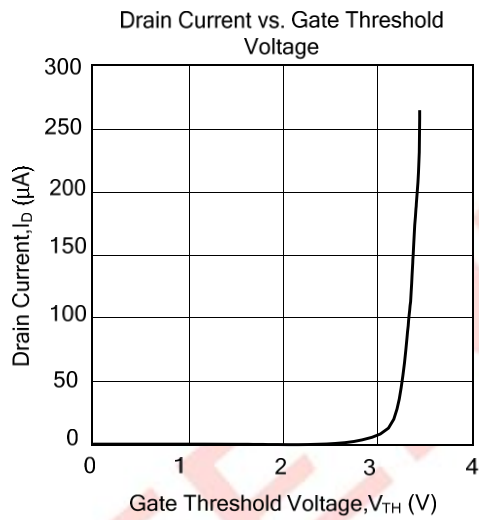
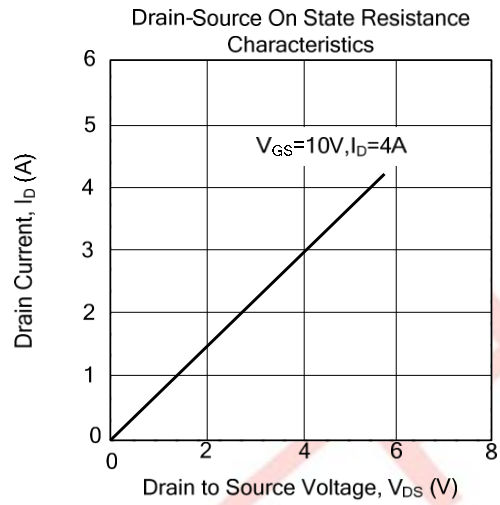
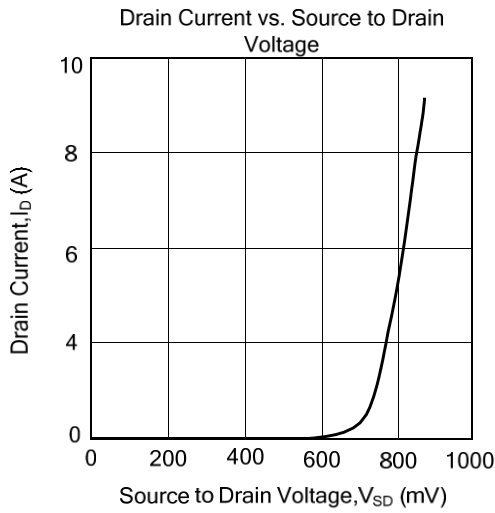
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TEST CIRCUITS AND WAVEFORMS(Cont.)



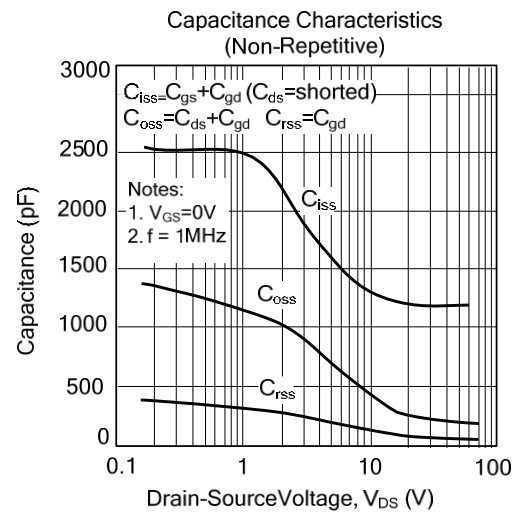
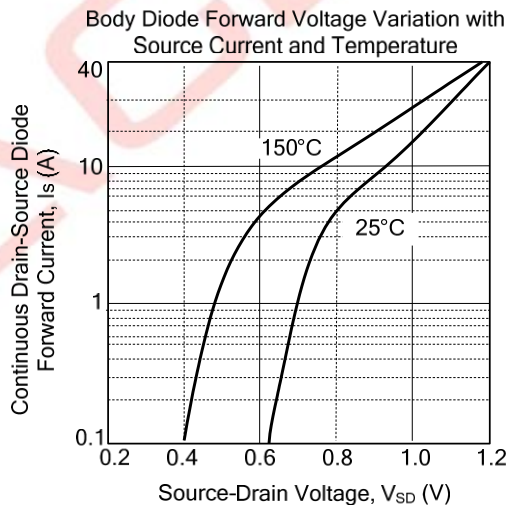
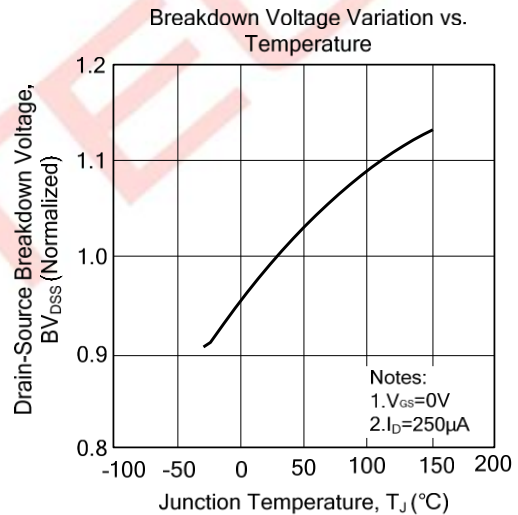
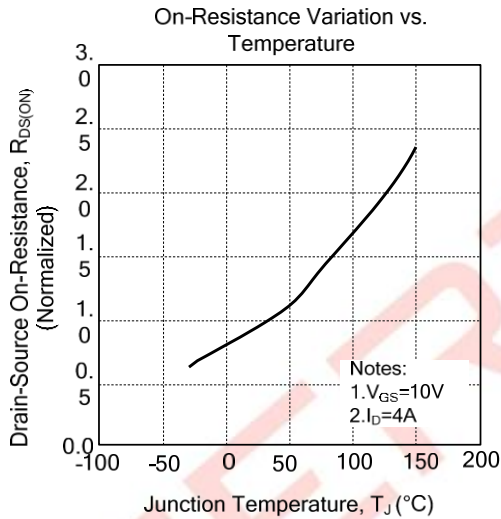
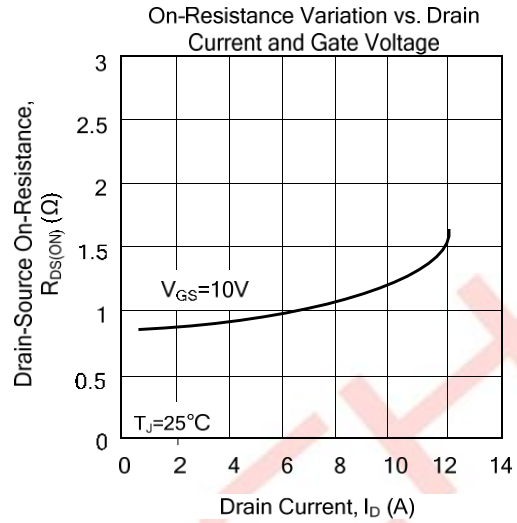
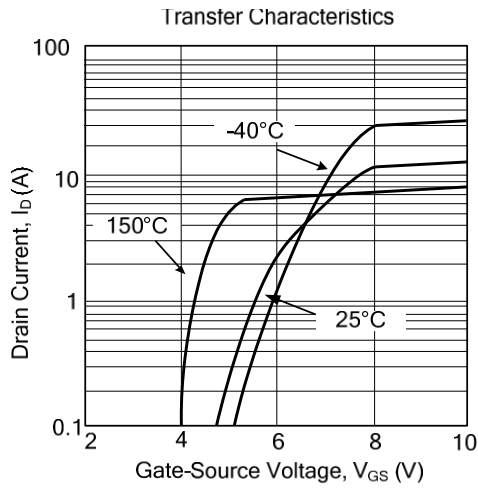
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TYPICAL CHARACTERISTICS CURVES



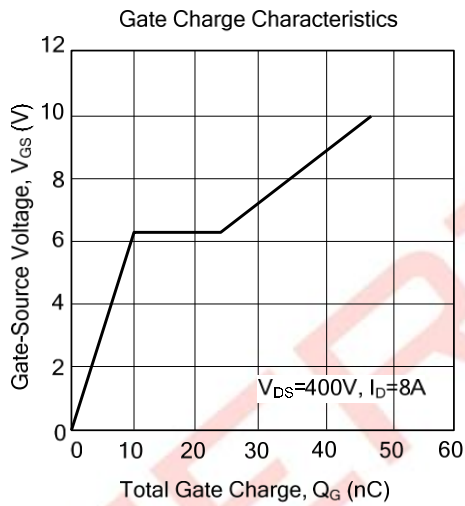
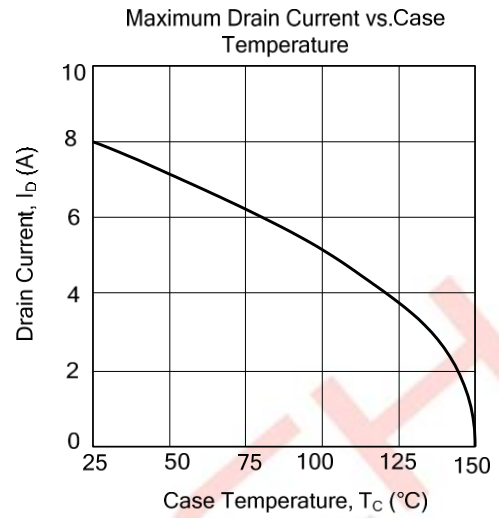
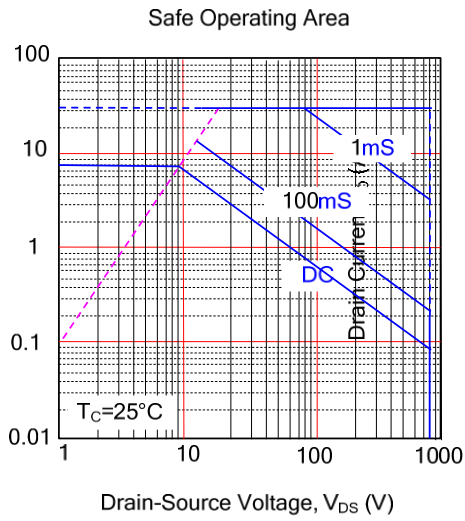
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TYPICAL CHARACTERISTICS CURVES (Cont.)



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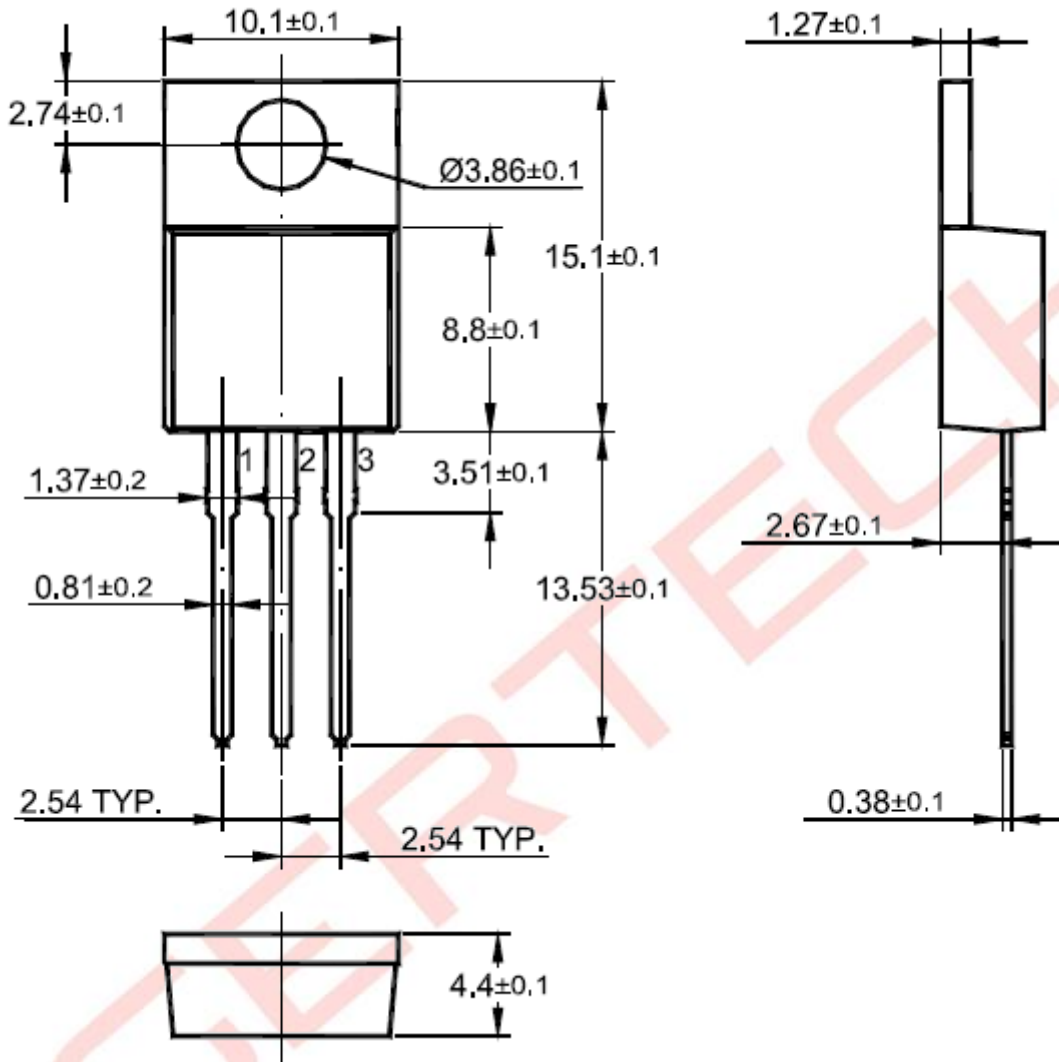
TYPICAL CHARACTERISTICS CURVES (Cont.)



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Package Outline

TO-220F



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