



UTP45N02

Power MOSFET

N-CHANNEL ENHANCEMENT MODE

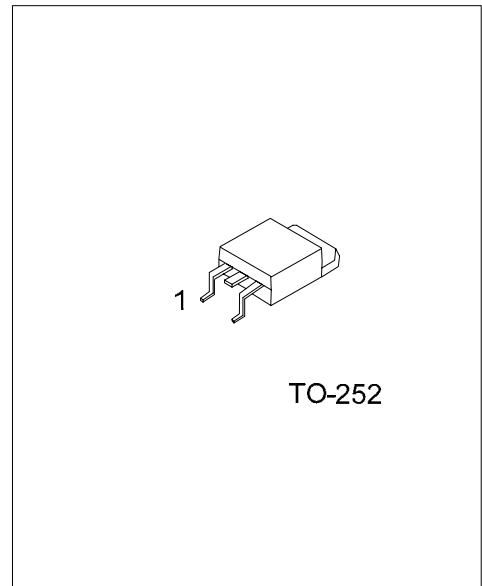
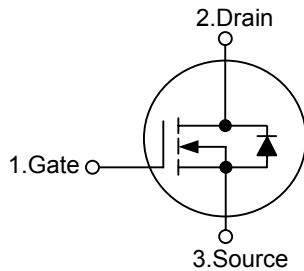
DESCRIPTION

As N-Channel power MOSFETs the **UTP45N02** is designed for use in applications such as switching regulators, switching converters, motor drivers and relay drivers.

FEATURES

- * 45A, 20V
- * $R_{DS(ON)} = 0.022\Omega$
- * Temperature compensating PSPICE model
- * Be driven directly from CMOS, NMOS, and TTL circuits
- * Peak current vs. pulse width curve

SYMBOL



*Pb-free plating product number: UTP45N02L

ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Normal	Lead Free Plating		1	2	3	
UTP45N02-TN3-R	UTP45N02L-TN3-R	TO-252	G	D	S	Tape Reel
UTP45N02-TN3-T	UTP45N02L-TN3-T	TO-252	G	D	S	Tube

<p>UTP45N02L-TN3-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Lead Plating</p>	<p>(1) R: Tape Reel, T: Tube</p> <p>(2) TN3: TO-252</p> <p>(3) L: Lead Free Plating, Blank: Pb/Sn</p>
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■ ABSOLUTE MAXIMUM RATINGS (Ta = 25 , unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V _{DSS}	20	V
Gate-Source Voltage	V _{GSS}	±10	V
Continuous Drain Current	I _D	45	A
Power Dissipation Derate Above 25	P _D	90 0.606	W W/
Junction Temperature	T _J	+175	
Storage Temperature	T _{STG}	-55 ~ +175	

Note: 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.

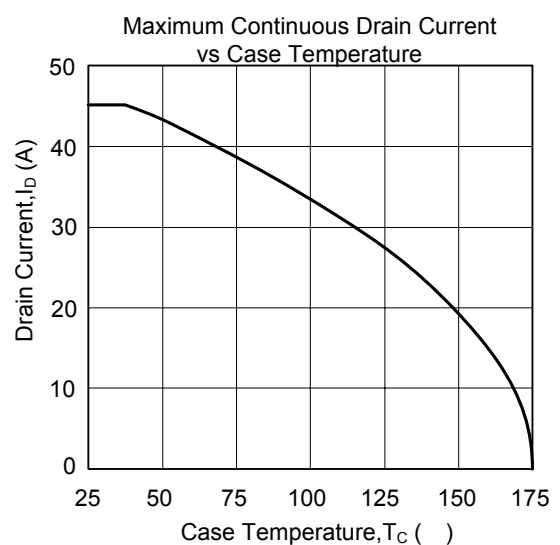
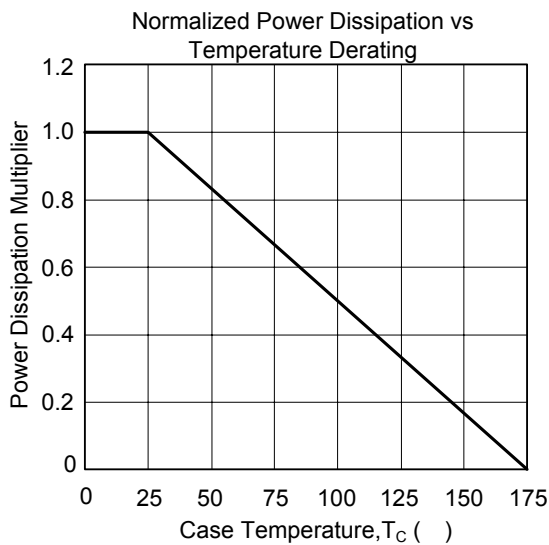
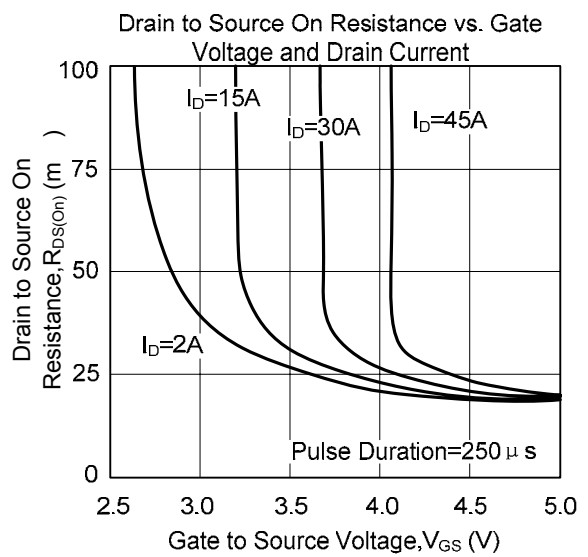
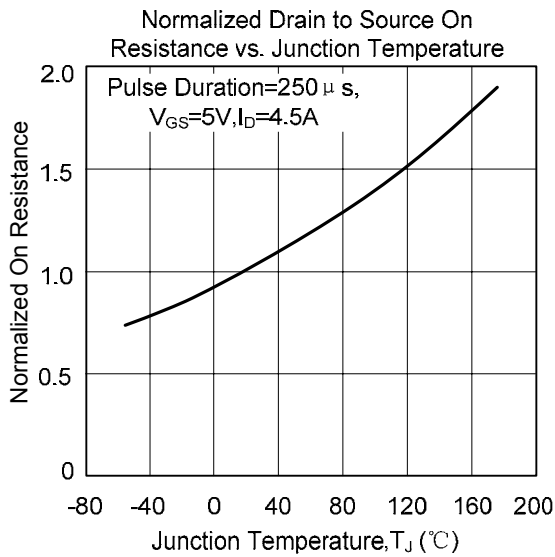
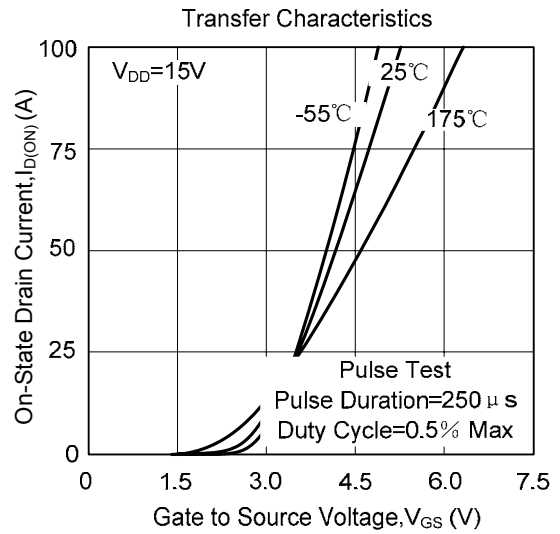
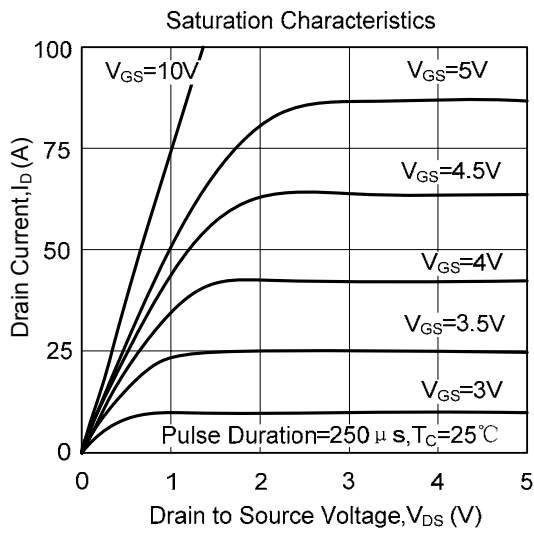
■ THERMAL DATA

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction to Ambient	θ _{JA}			80	/W
Junction to Case	θ _{JC}			1.65	/W

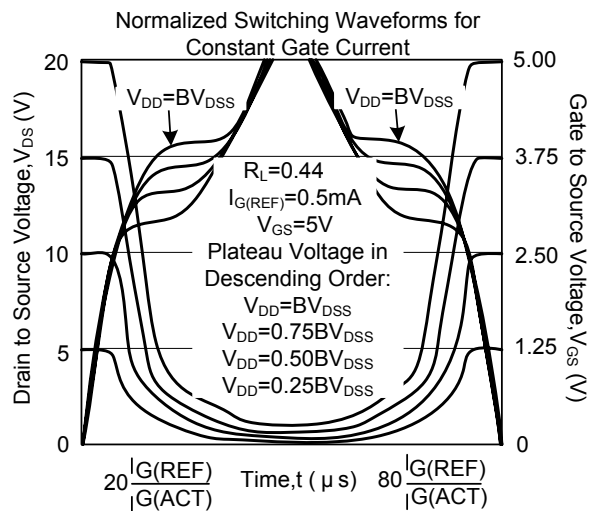
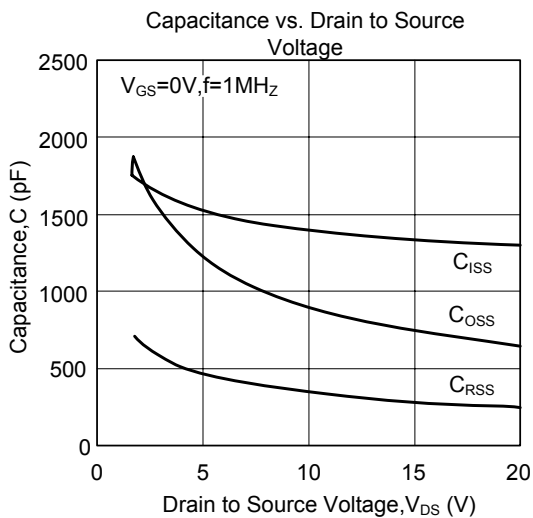
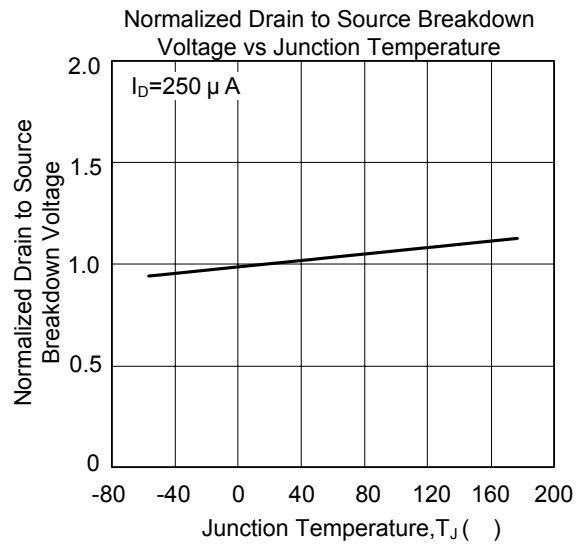
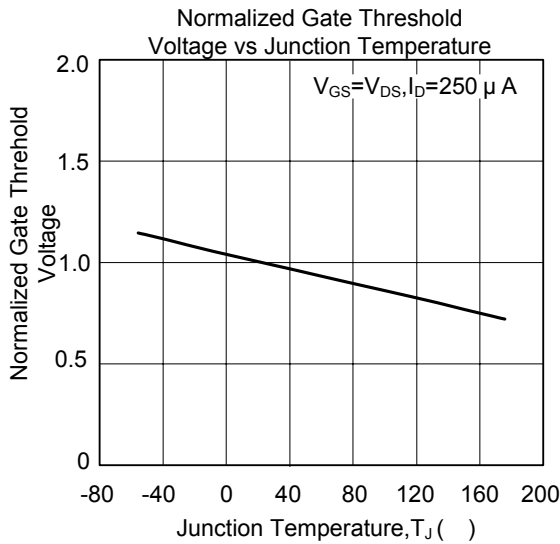
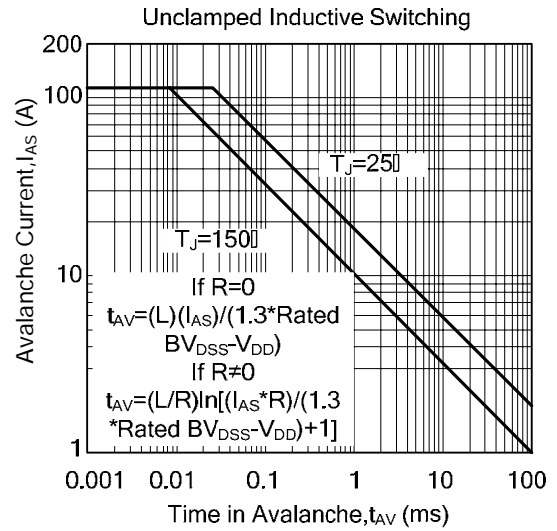
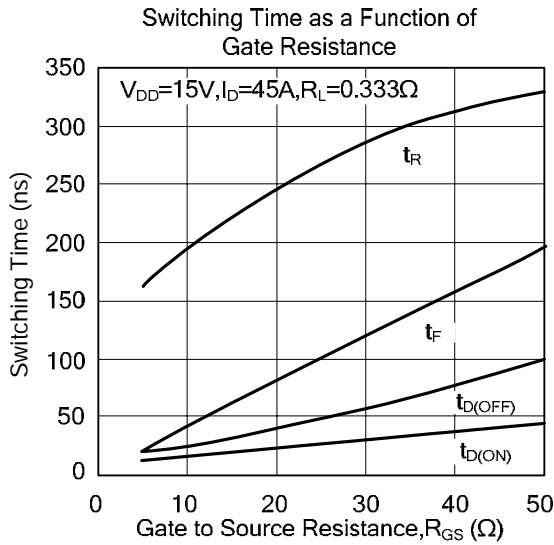
■ ELECTRICAL CHARACTERISTICS (T_c =25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250 μA	20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0 V			1	μA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} = ±10 V			±100	nA
ON CHARACTERISTICS						
Gate to Source Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250 μA	1		2	V
Drain-to-Source On Resistance	R _{DS(ON)}	V _{GS} = 5V, I _D =45 A			0.022	Ω
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =15 V, V _{GS} =0V, f=1MHz		1300		pF
Output Capacitance	C _{OSS}			724		
Reverse Transfer Capacitance	C _{RSS}			250		
SWITCHING PARAMETERS						
Turn-ON Time	t _{ON}	V _{GS} =5 V, V _{DD} =15 V, I _D = 45 A, R _{GS} = 5 , R _L = 0.33			260	ns
Turn-ON Delay Time	t _{D(ON)}			15		
Turn-ON Rise Time	t _R			160		
Turn-OFF Delay Time	t _{D(OFF)}			20		
Turn-OFF Fall-Time	t _F			20		
Turn-OFF Time	t _{OFF}				60	
Total Gate Charge	Q _G	V _{GS} =0V~10V	V _{DD} = 16V, I _D =45A, R _L = 0.35Ω	50	60	nC
Gate-Source Charge	Q _{GS}	V _{GS} =0V ~ 5 V		30	36	
Gate-Drain Charge	Q _{GD}	V _{GS} =0V~ 1 V		1.5	1.8	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V _{SD}	I _{SD} =45 A		1.5		V
Reverse Recovery Time	t _{RR}	I _{SD} = 45 A, dI _{SD} /dt = 100 A/μs		125		ns

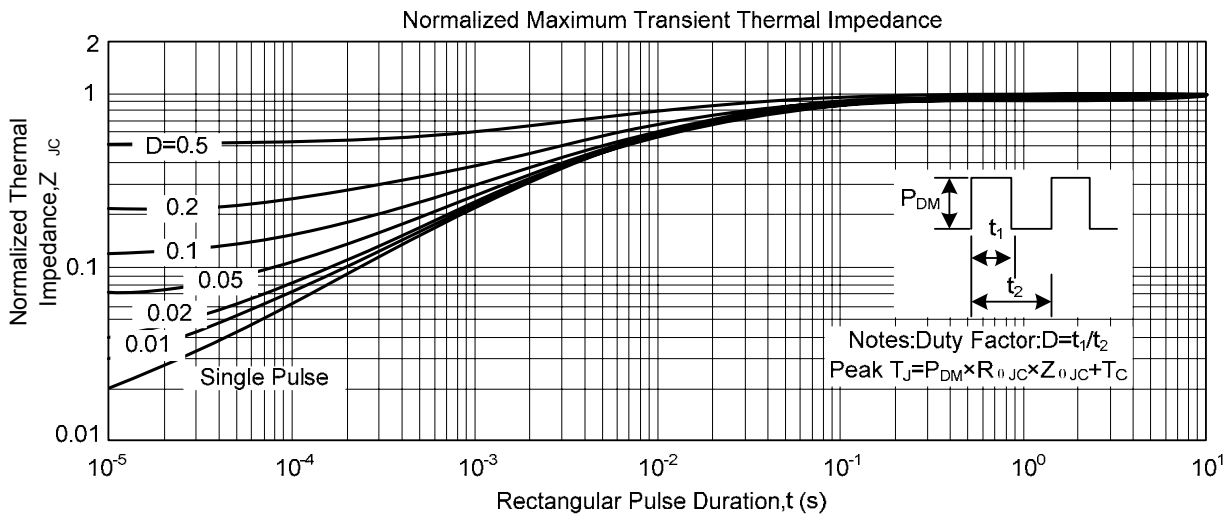
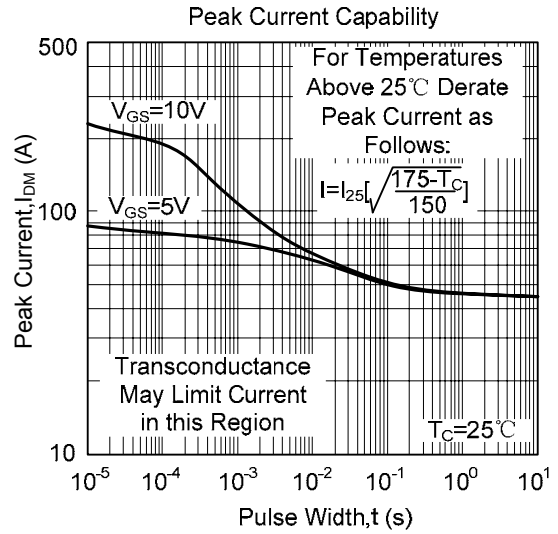
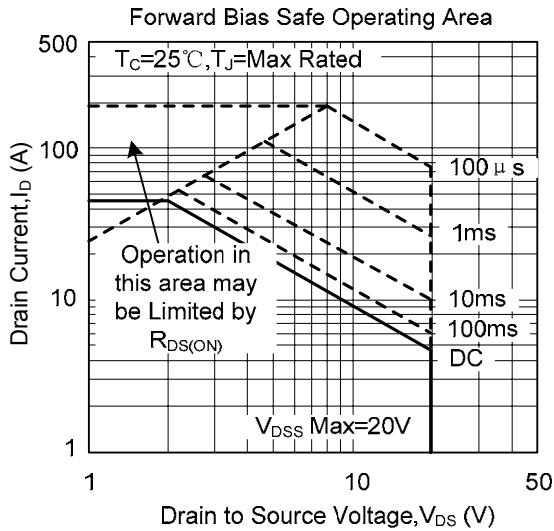
TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS(Cont.)



■ TYPICAL CHARACTERISTICS(Cont.)



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