



UP9T15G

Power MOSFET

N-CHANNEL ENHANCEMENT MODE POWER MOSFET

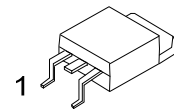
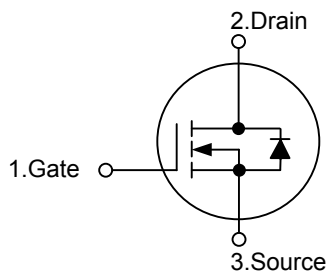
DESCRIPTION

The **UP9T15GL** uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.

FEATURES

- * $V_{DS}(V)=20V$
- * $I_D=12.5A$ ($V_{GS}=4.5V$)
- * $R_{DS(ON)}<50m\Omega$ @ $V_{GS}=4.5V$, $I_D=6A$
- * $R_{DS(ON)}<80m\Omega$ @ $V_{GS}=2.5V$, $I_D=5.2A$

SYMBOL



TO-252

*Pb-free plating product number: UP9T15GL

ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Normal	Lead Free Plating		1	2	3	
UP9T15G-TN3-R	UP9T15GL-TN3-R	TO-252	G	D	S	Tape Reel
UP9T15G-TN3-T	UP9T15GL-TN3-T	TO-252	G	D	S	Tube

UP9T15GL-TN3-R	(1)Packing Type	(1) R: Tape Reel, T: Tube
	(2)Package Type	(2) TN3: TO-252
	(3)Lead Plating	(3) L: Lead Free Plating, Blank: Pb/Sn

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current, @ $V_{GS} = 4.5V$	I_D	12.5	A
Pulsed Drain Current	I_{DM}	60	A
Power Dissipation	P_D	12.5	W
Linear Derating Factor		0.1	W/°C
Junction Temperature	T_J	+150	°C
Strong Temperature	T_{STG}	-55 ~ +150	°C

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}			110	°C/W
Junction-to-Case	θ_{JC}			10	°C/W

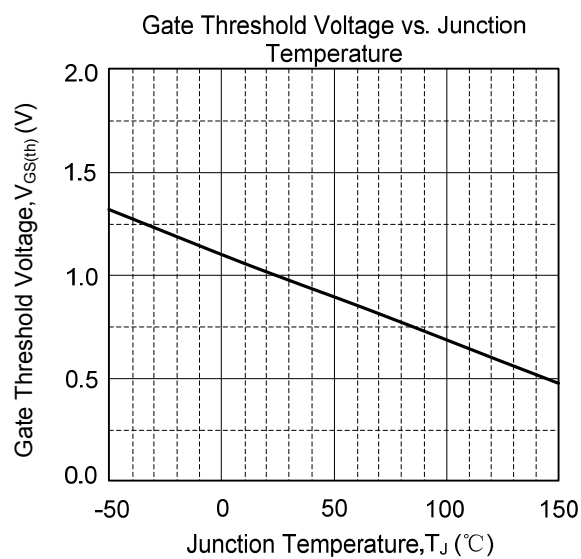
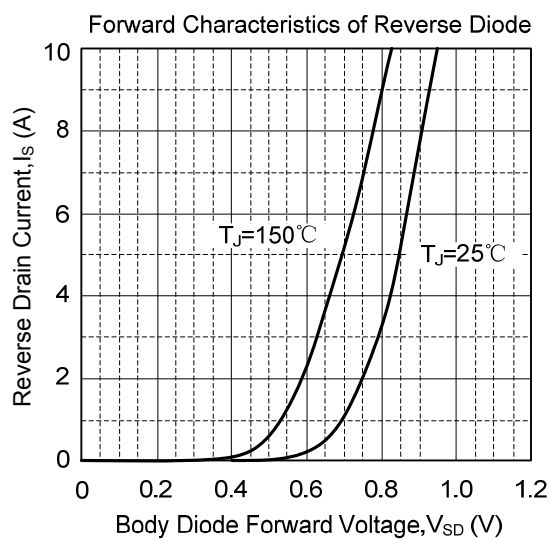
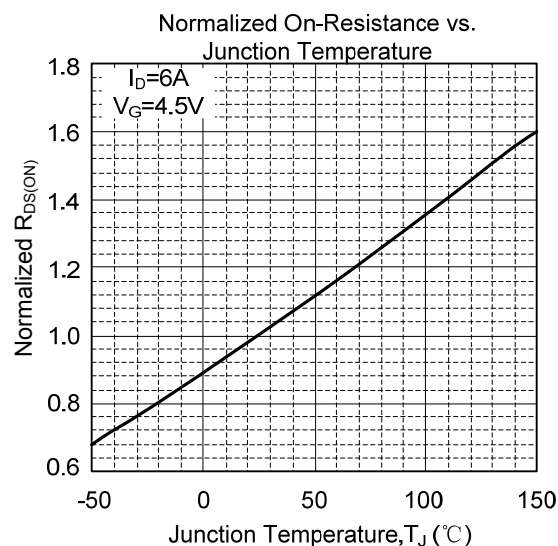
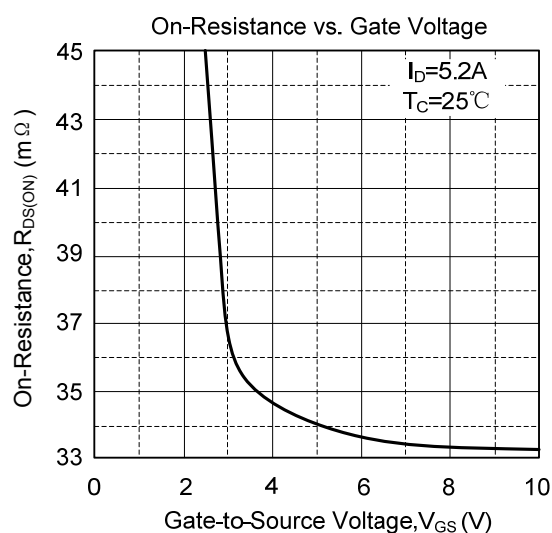
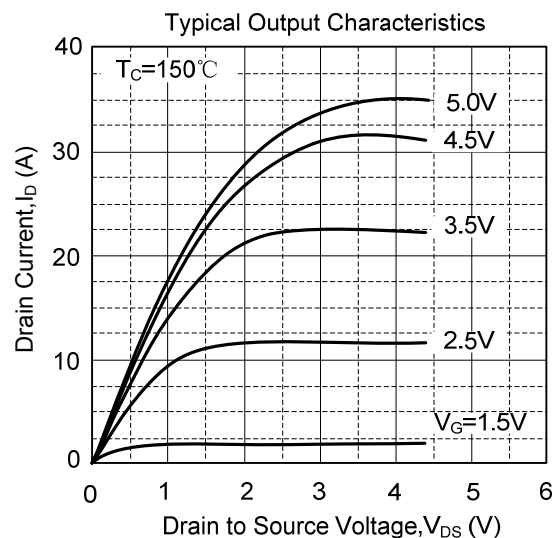
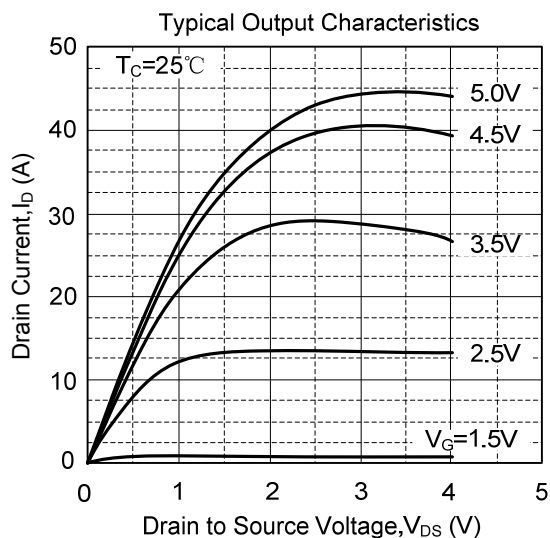
■ ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$, unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0 V, I _D =250 μA	20			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =20 V, V _{GS} =0 V			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±12 V			±100	nA
Breakdown Voltage Temperature Coefficient	ΔBV _{DSS} /ΔT _J	25℃, I _D =1mA		0.02		V/℃
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250 μA	0.5		1.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =4.5 V, I _D =6 A			50	mΩ
		V _{GS} =2.5 V, I _D =5.2 A			80	
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =20 V, V _{GS} =0 V, f=1.0MHz		360	580	pF
Output Capacitance	C _{OSS}			70		pF
Reverse Transfer Capacitance	C _{RSS}			50		pF
SWITCHING PARAMETERS						
Total Gate Charge(Note2)	Q _G	V _{DS} =16 V, V _{GS} =4.5 V, I _D =10 A		5	8	nC
Gate Source Charge	Q _{GS}			1		nC
Gate Drain Charge	Q _{GD}			2		nC
Turn-ON Delay Time(Note2)	t _{D(ON)}	V _{GS} =5 V, V _{DS} =10V,R _D =1 Ω, I _D =10 A , R _G =3.3 Ω		8		ns
Turn-ON Rise Time	t _R			55		ns
Turn-OFF Delay Time	t _{D(OFF)}			10		ns
Turn-OFF Fall-Time	t _F			3		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Forward On Voltage(Note2)	V _{SD}	I _S =10 A,V _{GS} =0V			1.3	V
Reverse Recovery Time(Note2)	t _{RR}	I _S =10 A, V _{GS} =0 V,dI/dt=100		17		ns
Reverse Recovery Charge	Q _{RR}	A/μs		9		nC

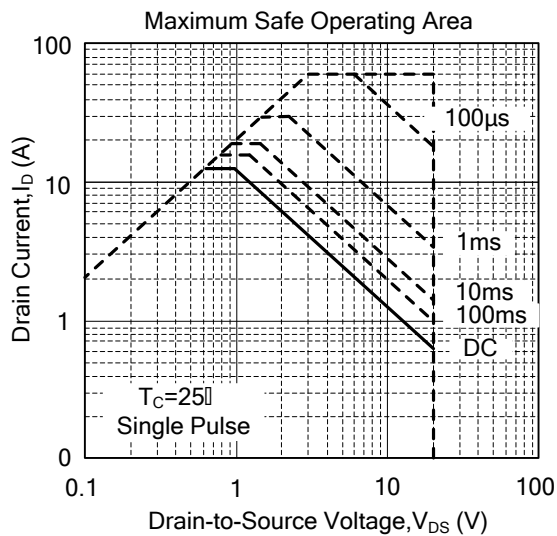
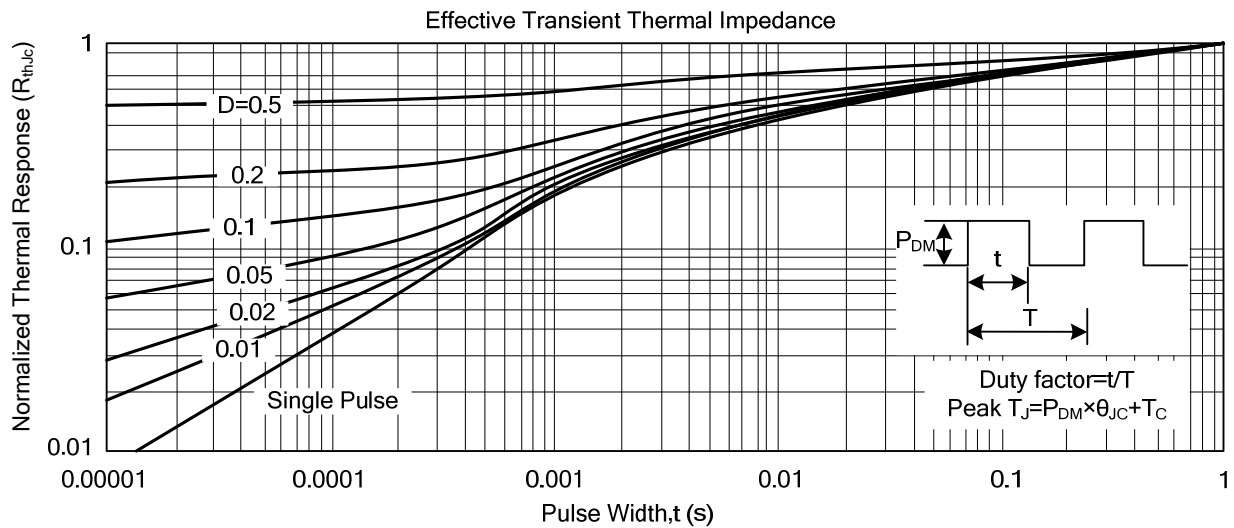
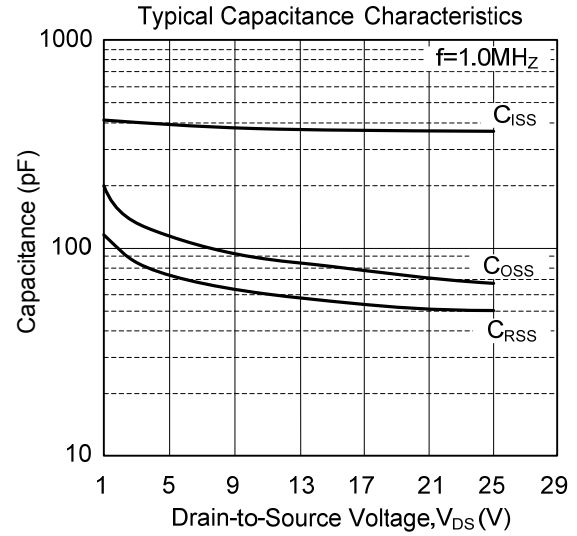
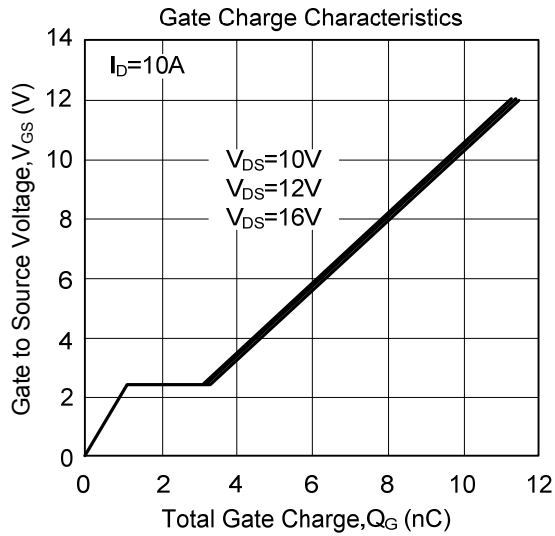
Notes: 1. Pulse width limited by safe operating area.

2. Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

■ TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS(Cont.)



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