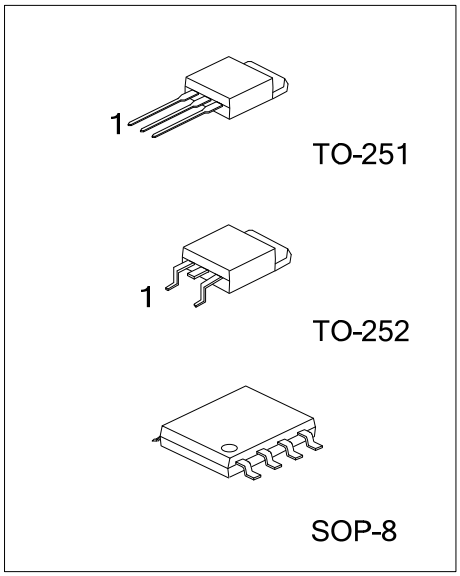
UT5504

Power MOSFET

P-CHANNEL LOGIC LEVEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR



■ DESCRIPTION

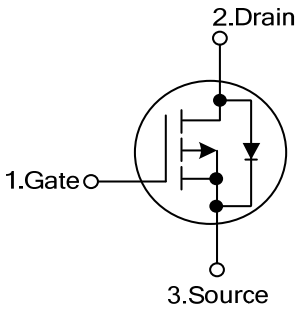
The UTC **UT5504** is a P-channel enhancement mode power MOSFET, providing customers fast switching, ruggedized device design, low on-resistance and cost-effectiveness by UTC's advanced technology.

The UTC **UT5504** can be used in applications such as DC/DC converters, all commercial-industrial surface mount and low voltage devices.

■ FEATURES

* Low On-Resistance
* Simple Drive Requirement
* Fast Switching Speed

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UT5504L-TM3-T	UT5504G-TM3-T	TO-251	G	D	S	-	-	-	-	-	Tube
UT5504L-TN3-R	UT5504G-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
-	UT5504G-S08-R	SOP-8	S	S	S	G	D	D	D	D	Tape Reel

Note: Pin Assignment: G: Gate D: Drain S: Source

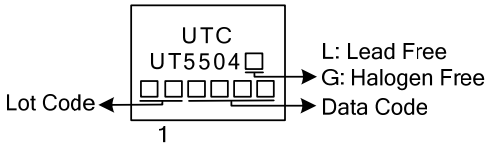
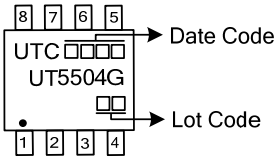
UT5504L-TM3-R

(1)Packing Type — (1) T: Tube, R: Tape Reel

(2)Package Type — (2) TM3: TO-251, TN3: TO-252, S08: SOP-8

(3)Green Package — (3) L: Lead Free, G: Halogen Free and Lead Free

■ MARKING

TO-220 / TO-220F / TO-252	SOP-8
	

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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DS}	-40	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25°C	I_D	-8	A
	T_C=70°C		-6	
Pulsed Drain Current		I_{DM}	-32	A
Power Dissipation	TO-251/TO-252	P_D	41	W
	SOP-8		5	
Junction Temperature		T_J	+150	°C
Storage 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	RATINGS	UNIT
Junction to Ambient	TO-251/TO-252	θ_{JA}	75	°C/W
	SOP-8		50	
Junction to Case	TO-251/TO-252	θ_{JC}	3	°C/W
	SOP-8		25	

Notes: 1. Pulse width limited by maximum junction temperature.
2. Duty cycle ≤ 1%

■ 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	-40			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-32V, V_{GS}=0V			1	μA
		V_{DS}=-30V, V_{GS}=0V, T_J=125°C			10	
Gate- Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±250	nA
On-State Drain Current (Note 1)	$I_{D(ON)}$	V_{DS}=-5V, V_{GS}=-10V	-32			A
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=-250μA	-1	-1.5	-2.5	V
Static Drain-Source On-State Resistance (Note 1)	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-6A		65	94	mΩ
		V_{GS}=-10V, I_D=-8A		45	55	
Forward Transconductance (Note 1)	g_{FS}	V_{DS}=-10V, I_D=-8A		11		S
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{GS}=0V, V_{DS}=10V, f=1MHz		1078		pF
Output Capacitance	C_{OSS}			131		pF
Reverse Transfer Capacitance	C_{RSS}			100		pF
SWITCHING PARAMETERS (Note 2)						
Total Gate Charge	Q_G	V_{GS}=-10V, V_{DS}=0.5BV_{DSS}, I_D=-8A		91	120	nC
Gate to Source Charge	Q_{GS}			9.6		nC
Gate to Drain Charge	Q_{GD}			4.7		nC
Turn-ON Delay Time	$t_{D(ON)}$	V_{GS}=-10V, V_{DS}=-20V, I_D ≒ -1A, R_{GS}=6Ω		28	35	ns
Rise Time	t_R			40	50	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			198	250	ns
Fall-Time	t_F			78	120	ns

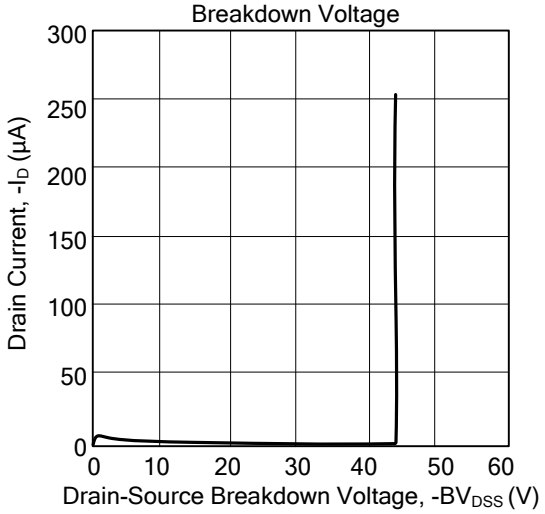
■ ELECTRICAL CHARACTERISTICS(Cont.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage (Note 1)	V_{SD}	I_F=I_S, V_{GS}=0V			-1	V
Reverse Recovery Time	t_{RR}	I_F=-5A, dI_F/dt=100A/μs		15.5		ns
Reverse Recovery Charge	Q_{RR}			7.9		nC
Continuous Current	I_S				-8	A
Pulsed Current (Note 3)	I_{SM}				-32	A

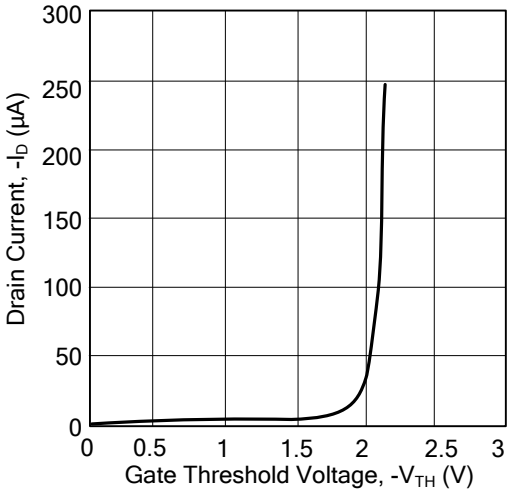
Notes: 1. Pulse test: Pulse Width ≤ 300μsec, Duty Cycle ≤ 2 %.
2. Independent of operating temperature.
3. Pulse width limited by maximum junction temperature.

■ TYPICAL CHARACTERISTICS

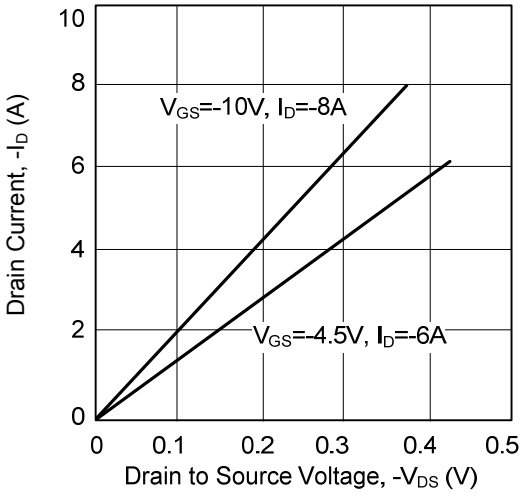
Drain Current vs. Drain-Source Breakdown Voltage



Drain Current vs. Gate Threshold Voltage



Drain-Source On-State Resistance Characteristics



Drain Current vs. Source to Drain Voltage