

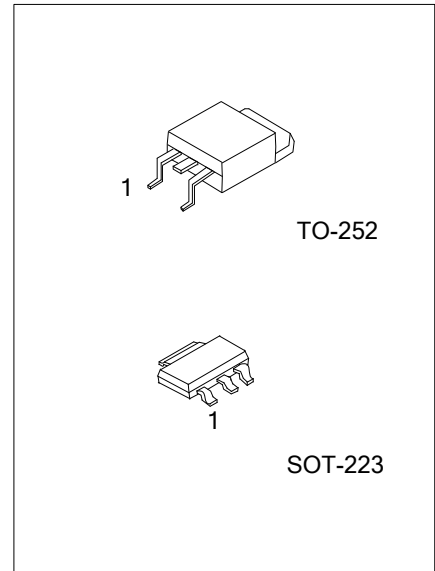
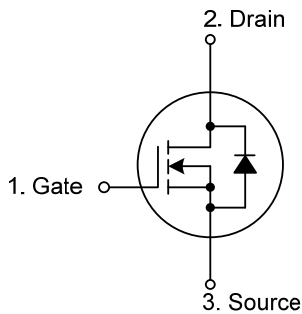
**UTD454****Power MOSFET****N-CHANNEL ENHANCEMENT
MODE POWER MOSFET****DESCRIPTION**

The UTC **UTD454** is an N-channel enhancement MOSFET providing perfect $R_{DS(ON)}$ and low gate charge with UTC advanced technology.

The UTC **UTD454** is intended for being used in PWM, load switching and general purpose applications.

FEATURES

- * $R_{DS(ON)} \leq 33 \text{ m}\Omega$ @ $V_{GS}=10\text{V}$, $I_D=12\text{A}$
- * $R_{DS(ON)} \leq 47 \text{ m}\Omega$ @ $V_{GS}=4.5\text{V}$, $I_D=6.0\text{A}$
- * $V_{DS} (\text{V}) = 40\text{V}$
- * $I_D = 12 \text{ A}$ @ $V_{GS} = 10\text{V}$
- * Low gate charge

SYMBOL**ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTD454L-AA3-R	UTD454G-AA3-R	SOT-223	G	D	S	Tape Reel
UTD454L-TN3-R	UTD454G-TN3-R	TO-252	G	D	S	Tape Reel
UTD454L-TN3-T	UTD454G-TN3-T	TO-252	G	D	S	Tube

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

UTD454G-AA3-R	(1)Packing Type	(1) R: Tape Reel, T: Tube
	(2)Package Type	(2) AA3: SOT-223, TN3: TO-252
	(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

■ ABSOLUTE MAXIMUM RATINGS ($T_C=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_C=25^{\circ}\text{C}$)	I_D	12	A
Pulsed Drain Current (Note 2)	I_{DM}	30	A
Avalanche Current (Note 2)	I_{AR}	13.6	A
Repetitive avalanche energy ($L=0.1\text{mH}$)(Note 2)	E_{AR}	9.2	mJ
Power Dissipation ($T_C=25^{\circ}\text{C}$)	SOT-223	P_D	1.3
	TO-252		44
Junction Temperature	T_J	+150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

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.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	140 (Note)	$^{\circ}\text{C/W}$
		110 (Note)	$^{\circ}\text{C/W}$
Junction to Case	θ_{JC}	96 (Note)	$^{\circ}\text{C/W}$
		2.84 (Note)	$^{\circ}\text{C/W}$

Note: Device mounted on FR-4 substrate P_C board, 2oz copper, with 1inch square copper plate.

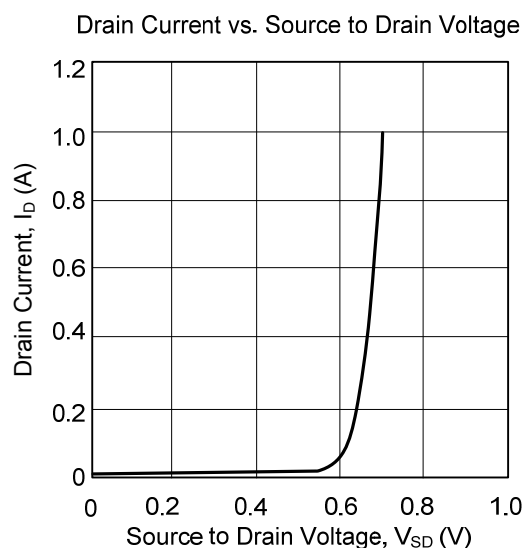
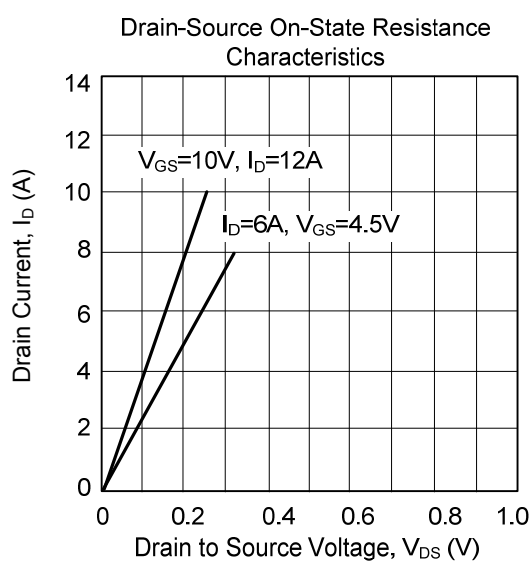
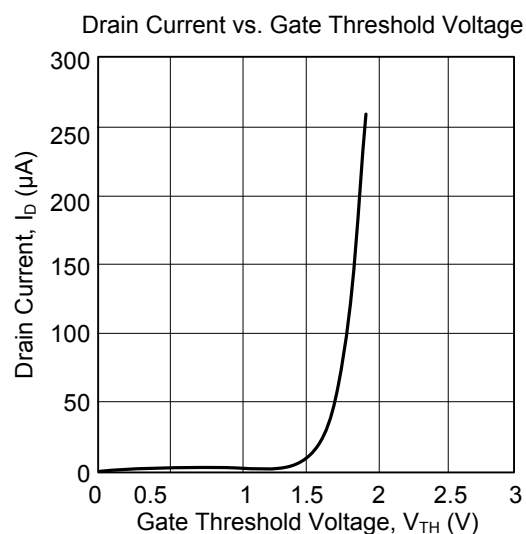
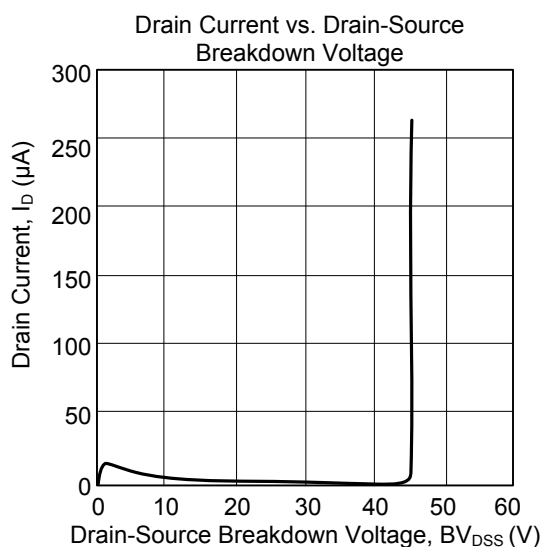
■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V	40			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =40V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	1.0	1.6	3.0	V
On State Drain Current	I _{D(ON)}	V _{DS} =5V, V _{GS} =10V	30			A
Drain to Source On-state Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =12A		27	33	mΩ
		V _{GS} =4.5V, I _D =6.0A		39	47	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =20V, f=1MHz		380	500	pF
Output Capacitance	C _{OSS}			57	150	pF
Reverse Transfer Capacitance	C _{RSS}			49	60	nC
Gate Resistance	R _G	V _{GS} =0V, V _{DS} =0V, f=1MHz		1.8		Ω
SWITCHING PARAMETERS						
Total Gate Charge	Q _G	V _{DS} =20V, V _{GS} =10V, I _D =12A		17		nC
Gate Source Charge	Q _{GS}			3		nC
Gate Drain Charge	Q _{GD}			4		nC
Turn-ON Delay Time	t _{D(ON)}	V _{DS} =20V, V _{GS} =10V, R _L =1.7Ω, R _G =3Ω		4		ns
Turn-ON Rise Time	t _R			15		ns
Turn-OFF Delay Time	t _{D(OFF)}			11		ns
Turn-OFF Fall-Time	t _F			20		ns
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS						
Diode Continuous Forward Current	I _S				12	A
Drain-Source Diode Forward Voltage	V _{SD}	I _S =1A, V _{GS} =0V		0.76	1.0	V
Reverse Recovery Time	t _{rr}	I _F =12A, dI/dt=100A/μs,		24		ns
Reverse Recovery Charge	Q _{rr}	V _{GS} =0V		26		nC

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

2. Essentially independent of operating temperature.

■ TYPICAL CHARACTERISTICS



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