



UTC654

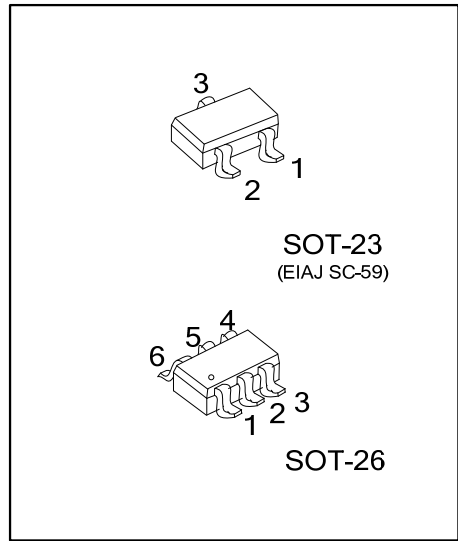
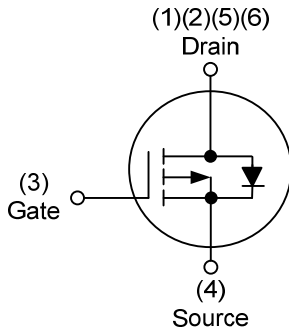
Power MOSFET

P-CHANNEL ENHANCEMENT MODE

■ DESCRIPTION

As P-Channel Logic Level MOSFET, **UTC654** has been optimized for battery power management applications. And it's produced using UTC's advanced Power Trench process.

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment						Packing
Lead Free	Halogen Free		1	2	3	4	5	6	
UTC654L-AE3-R	UTC654G-AE3-R	SOT-23	S	G	D	-	-	-	Tape Reel
UTC654L-AG6-R	UTC654G-AG6-R	SOT-26	D	D	G	S	D	D	Tape Reel

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

<p>UTC654G-AE3-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) AE3: SOT-23, AG6: SOT-26</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING

SOT-23	SOT-26

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

PARAMETER	SYMBOL	RATINGS	UNIT	
Drain-Source Voltage	V_{DSS}	-30	V	
Gate-Source Voltage	V_{GSS}	± 20		
Continuous Drain Current (Note 3)	I_D	-2	A	
Pulsed Drain Current (Note 2)	I_{DM}	-8		
Power Dissipation	SOT-23	P_D	1.38	W
	SOT-26		1.6	W
Junction Temperature	T_J	+150	$^\circ\text{C}$	
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$	

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	SOT-23	θ_{JA}		90	$^\circ\text{C/W}$
	SOT-26			78	$^\circ\text{C/W}$
Junction to Case	SOT-23	θ_{JC}		32	$^\circ\text{C/W}$
	SOT-26			30	$^\circ\text{C/W}$

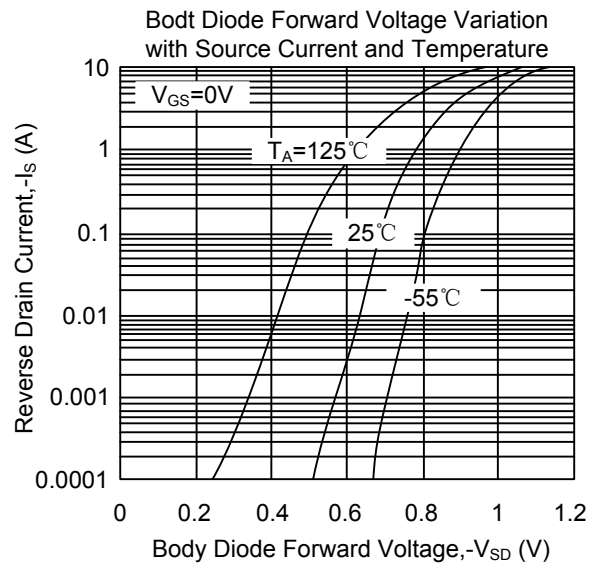
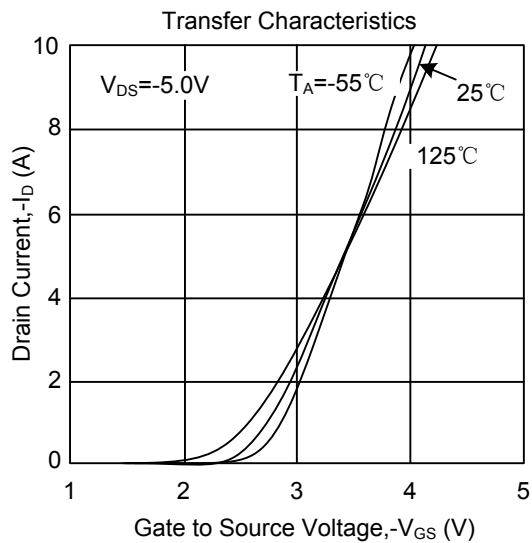
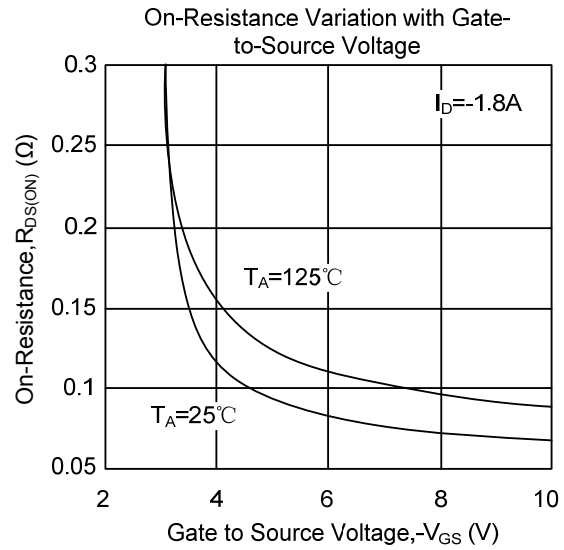
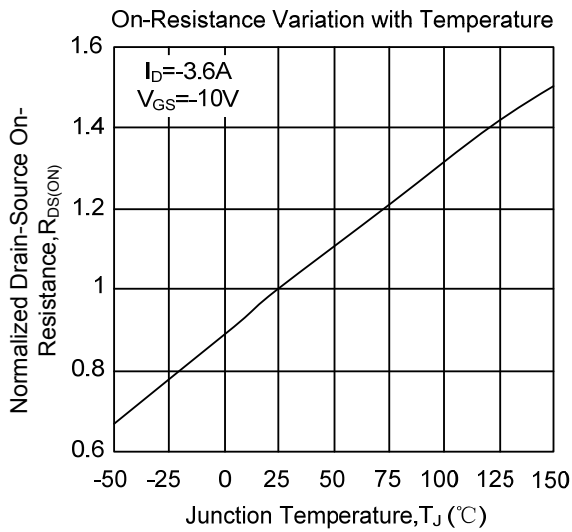
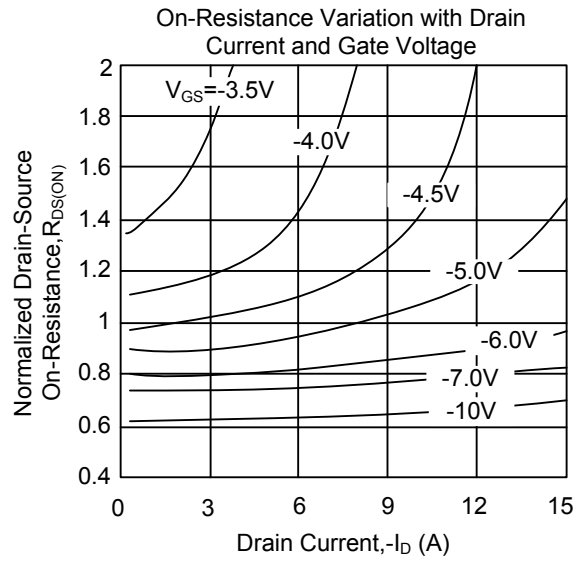
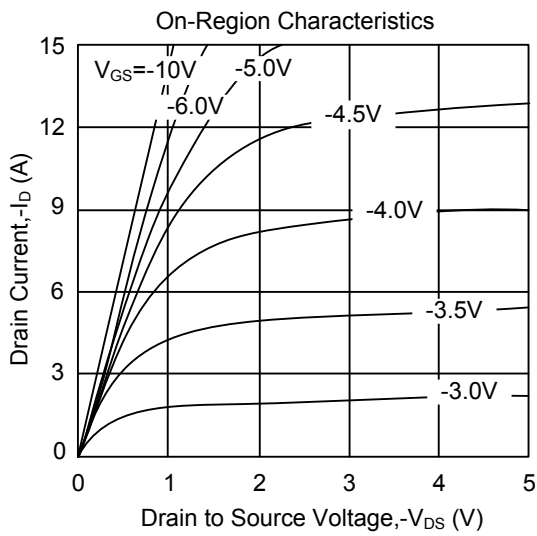
Note: Surface mounted on 1 in² copper pad of FR4 board; 270 $^\circ\text{C/W}$ when mounted on min.

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

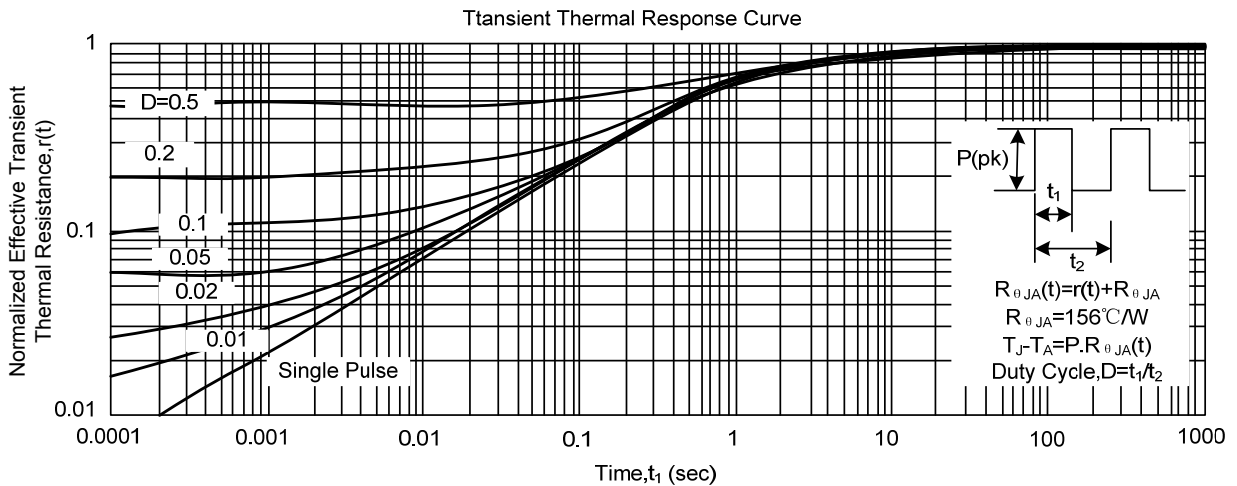
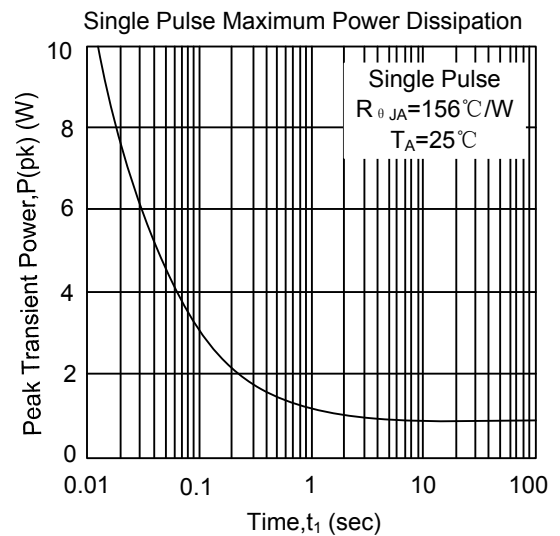
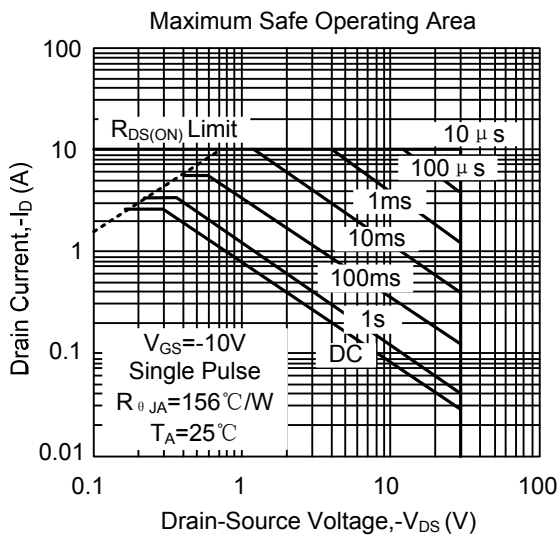
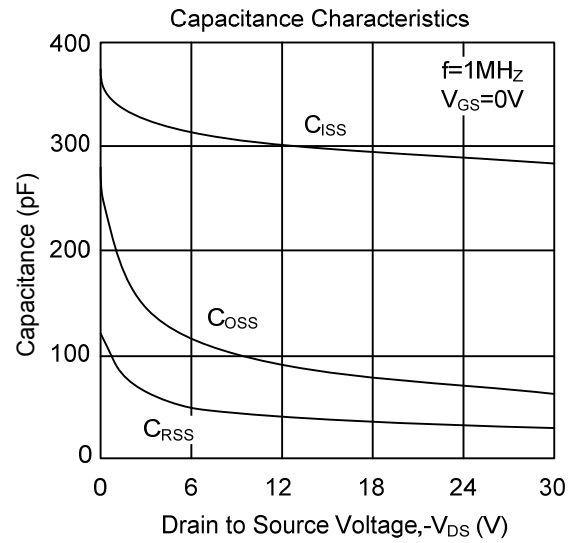
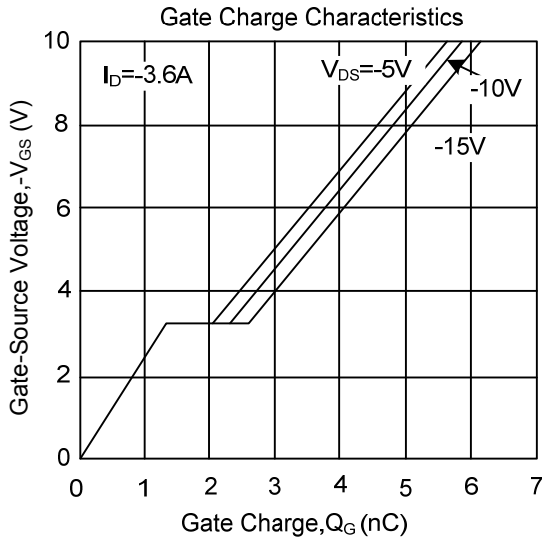
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0\text{V}, I_D = -250 \mu\text{A}$	-30			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS} = -24\text{V}, V_{GS} = 0\text{V}$			-1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{DS} = 0\text{V}, V_{GS} = \pm 20\text{V}$			± 100	nA
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Referenced to $25^\circ\text{C}, I_D = -250 \mu\text{A}$		-22		mV/ $^\circ\text{C}$
ON CHARACTERISTICS						
Gate-Threshold Voltage	$V_{GS(TH)}$	$V_{DS} = V_{GS}, I_D = -250 \mu\text{A}$	-1	-1.9	-3	V
Static Drain-Source On-Resistance (Note 2)	$R_{DS(ON)}$	$V_{GS} = -10\text{V}, I_D = -3.6\text{A}$		63	75	m Ω
		$V_{GS} = -4.5\text{V}, I_D = -2.7\text{A}$		100	125	
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{ISS}	$V_{DS} = -15\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$		298		pF
Output Capacitance	C_{OSS}			83		
Reverse Transfer Capacitance	C_{RSS}			39		
SWITCHING CHARACTERISTICS						
Total Gate Charge (Note 2)	Q_G	$V_{DS} = -15\text{V}, V_{GS} = -10\text{V}, I_D = -3.6\text{A}$		6.2	9	nC
Gate-Source Charge	Q_{GS}			1		
Gate-Drain Charge	Q_{GD}			1.2		
Turn-ON Delay Time (Note 2)	$t_{D(ON)}$	$V_{DD} = -15\text{V}, I_D = -1\text{A}, V_{GS} = -10\text{V}, R_{GEN} = 6 \Omega$		6	12	ns
Turn-ON Rise Time	t_R			13	23	
Turn-OFF Delay Time	$t_{D(OFF)}$			11	20	
Turn-OFF Fall-Time	t_F			6	12	
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Continuous Drain Source Diode Forward Current	I_S				-2.0	A
Maximum Body-Diode Pulsed Current	I_{SM}				-8.0	A
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS} = 0\text{V}, I_S = -1.3\text{A}$ (Note 2)		-0.8	-1.2	V

Notes: 1. Pulse width limited by $T_{J(MAX)}$
2. Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

■ TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS



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