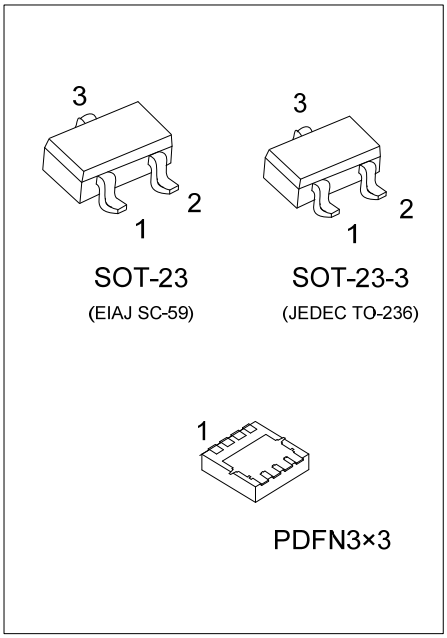
UT2352

Power MOSFET

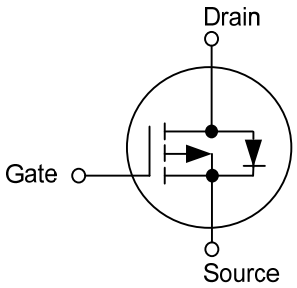
-30V, -1.3A P-CHANNEL ENHANCEMENT MODE



■ DESCRIPTION

As P-Channel Logic Level MOSFET, **UT2352** has been optimized for battery power management applications. And it's produced using UTC's advanced Power Trench process.

■ SYMBOL



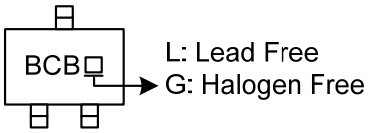
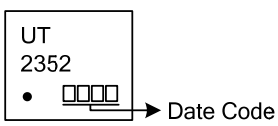
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								acking
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UT2352L-AE2-R	UT2352G-AE2-R	SOT-23-3	G	S	D	-	-	-	-	-	Tape Reel
UT2352L-AE3-R	UT2352G-AE3-R	SOT-23	G	S	D	-	-	-	-	-	Tape Reel
UT2352G-P3030-R	UT2352G-P3030-R	PDFN3×3	S	S	S	G	D	D	D	D	Tape Reel

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

UT2352G-AE2-R (1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) AE2: SOT-23-3, AE3: SOT-23, P3030: PDFN3×3 (3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

SOT-23-3 / SOT-23	PDFN3×3
	

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

PARAMETER		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	-30	V
Gate-Source Voltage		V_{GSS}	±25	V
Continuous Drain Current		I_D	-1.3	A
Pulsed Drain Current		I_{DM}	-10	A
Power Dissipation (Note 3)	SOT-23-3	P_D	0.4	W
	SOT-23		0.46	W
	PDFN3×3		2.4	W
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 CHARACTERISTICS

PARAMETER		SYMBOL	RATING	UNIT
Junction-to-Ambient (Note 3)	SOT-23-3	θ_{JA}	310	°C/W
	SOT-23		250	°C/W
	PDFN3×3		52	°C/W
Junction-to-Case	SOT-23-3	θ_{JC}	90	°C/W
	SOT-23		75	°C/W
	PDFN3×3		3	°C/W

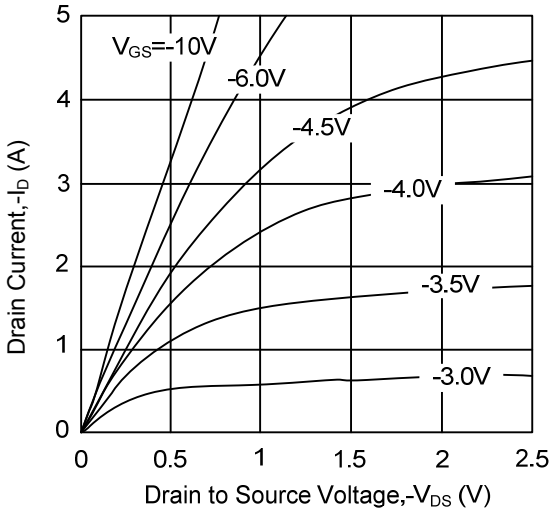
■ ELECTRICAL CHARACTERISTICS (T_A =25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=-250uA	-30			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-24V, V_{GS}=0V			-1	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±25V, V_{DS}=0V			±100	nA
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to 25℃, I_D=-250uA		-17		mV/°C
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=-250uA	-0.8	-2.0	-2.5	V
Drain-Source On-State Resistance (Note 2)	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-1.3A		150	180	mΩ
		V_{GS}=-4.5V, I_D=-1.1A		250	300	mΩ
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{ISS}	V_{GS}=0V, V_{DS}=-15V, f=1MHz		150		pF
Output Capacitance	C_{OSS}			40		pF
Reverse Transfer Capacitance	C_{RSS}			20		pF
SWITCHING CHARACTERISTICS						
Total Gate Charge	Q_G	V_{DS}=-10V, V_{GS}=-4.5V, I_D=-0.9A		1.4	1.9	nC
Gate-Source Charge	Q_{GS}			0.5		nC
Gate-Drain Charge	Q_{GD}			0.5		nC
Turn-ON Delay Time (Note 2)	$t_{D(ON)}$	V_{DD}=-10V, V_{GS}=-10V, I_D=-1A, R_G=6Ω		4	8	ns
Turn-ON Rise Time	t_R			15	28	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			10	18	ns
Turn-OFF Fall Time	t_F			1	2	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage(Note2)	V_{SD}	V_{GS}=0V, I_S=-0.42 A		-0.8	-1.2	V
Maximum Continuous Drain Source Diode Forward Current	I_S				-0.42	A
Reverse Recovery Time	t_{rr}	I_F = -3.9A, dI_F/dt = 100A/μs		17		ns
Reverse Recovery Charge	Q_{rr}			7		nC

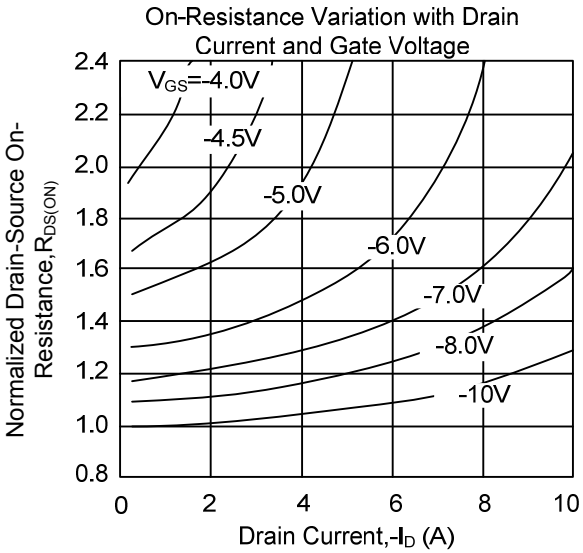
Notes: 1. Pulse width limited by $T_{J(MAX)}$
2. Pulse width ≤300us, duty cycle ≤2%.
3. Surface mounted on 0.001 in ^{2} pad of 2oz. copper; 270℃/W when mounted on min.

■ TYPICAL CHARACTERISTICS

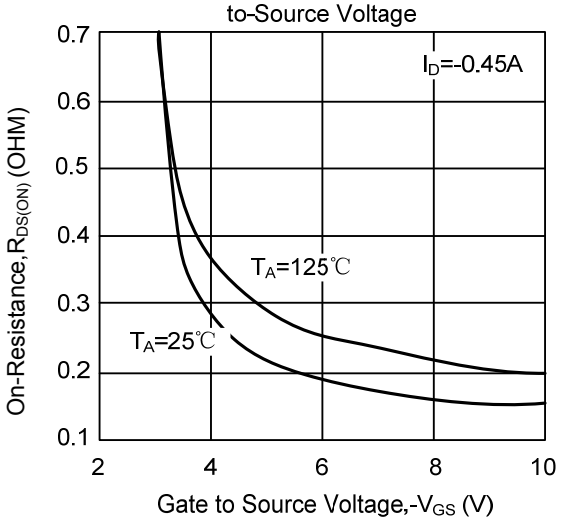
On-Region Characteristics



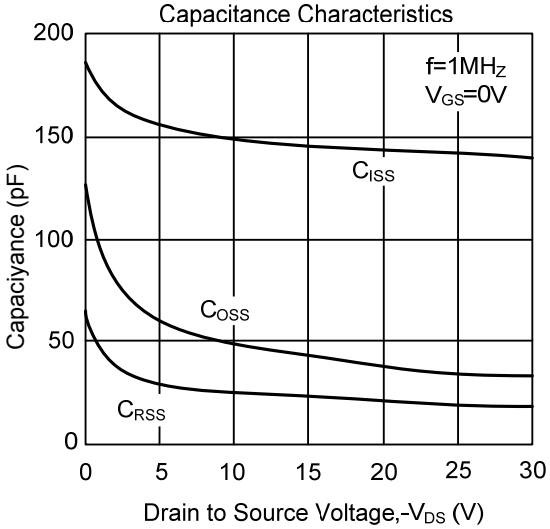
On-Resistance Variation with Drain Current and Gate Voltage



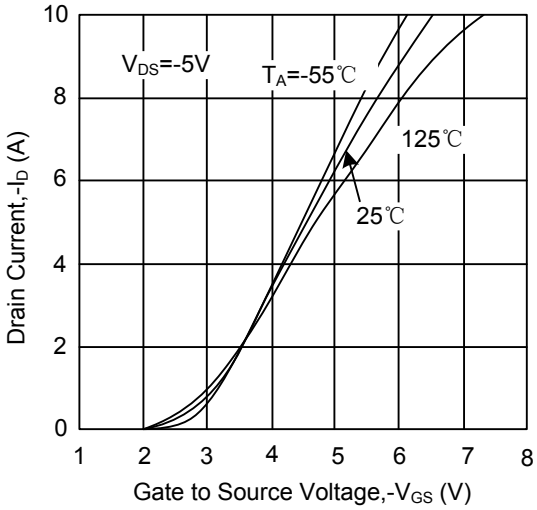
On-Resistance Variation with Gate-to-Source Voltage



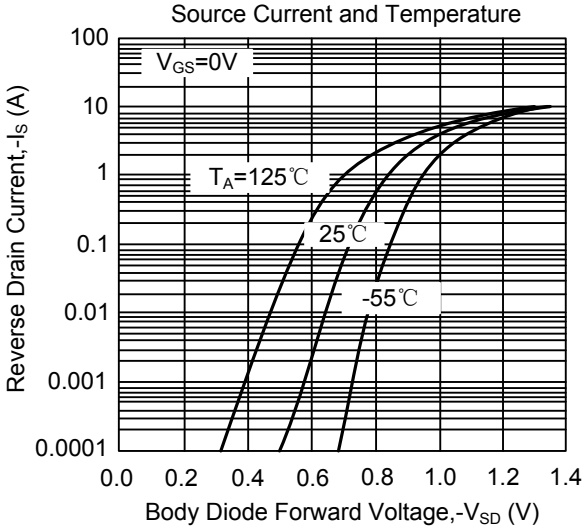
Capacitance Characteristics



Transfer Characteristics

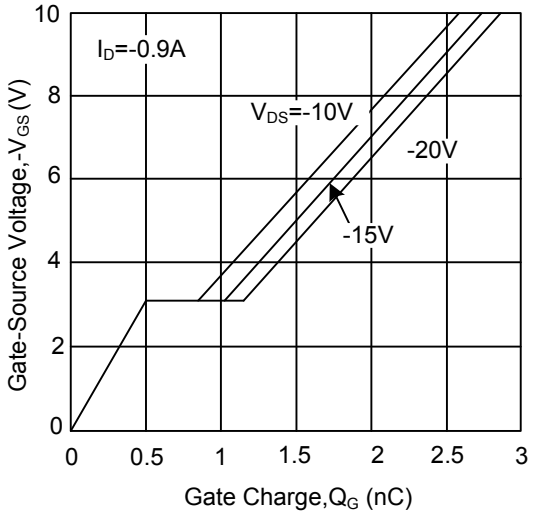


Body Diode Forward Voltage Variation with Source Current and Temperature

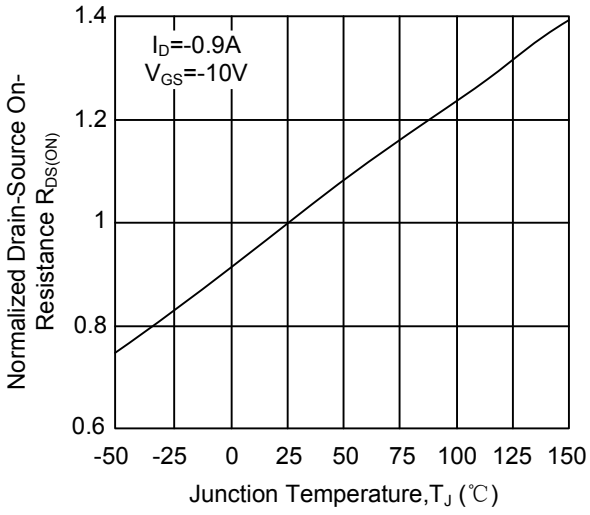


■ TYPICAL CHARACTERISTICS (Cont.)

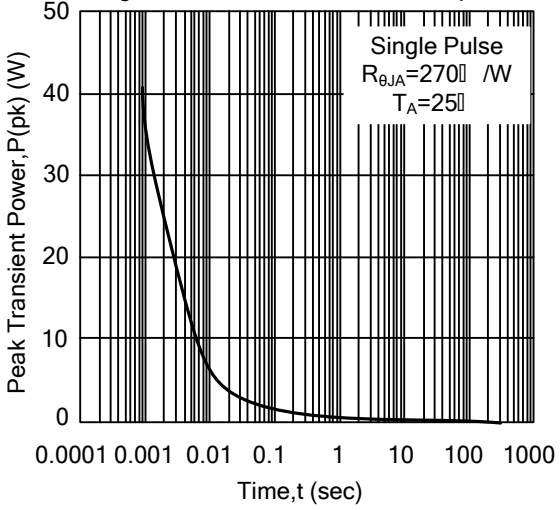
Gate Charge Characteristics



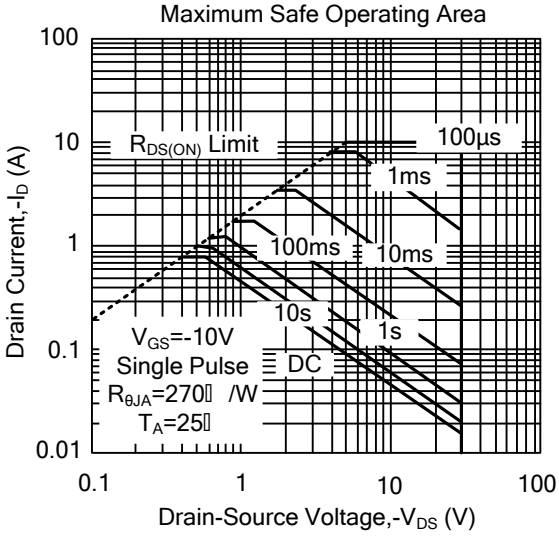
On-Resistance Variation with Temperature



Single Pulse Maximum Power Dissipation



Maximum Safe Operating Area



Transient Thermal Response Curve