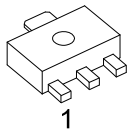
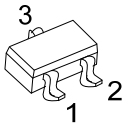
UDF020N15

Power MOSFET

0.2A, 150V N-CHANNEL DEPLETION-MODE POWER MOSFET



SOT-89



SOT-23-3
(JEDEC TO-236)

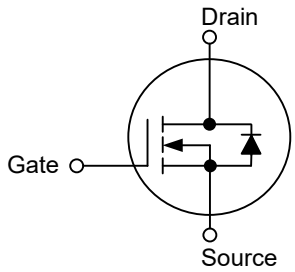
■ DESCRIPTION

The UTC **UDF020N15** is an N-channel power MOSFET using UTC's advanced technology to provide the customers with high switching speed.

■ FEATURES

* $R_{DS(ON)} \leq 22\ \Omega$ @ V_{GS}=0V, I_D=200mA
* Depletion Mode (Normally On)
* Proprietary Advanced Planar Technology
* Rugged Polysilicon Gate Cell Structure
* Fast Switching Speed

■ SYMBOL



■ ORDERING INFORMATION

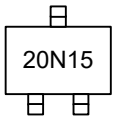
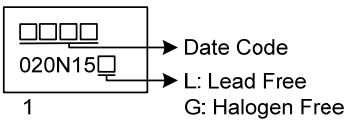
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UDF020N15L-AB3-R	UDF020N15G-AB3-R	SOT-89	G	D	S	Tape Reel
UDF020N15L-AE2-R	UDF020N15G-AE2-R	SOT-23-3	G	S	D	Tape Reel

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

UDF020N15G-AB3-R

(1)Packing Type	(1) R: Tape Reel
(2)Package Type	(2) AB3: SOT-89, AE2: SOT-23-3
(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

SOT-23-3	SOT-89
	

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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage (Note 2)		V_{DSX}	150	V
Drain-Gate Voltage (Note 2)		V_{DGX}	150	V
Gate-Source Voltage		V_{GSS}	±30	V
Drain Current	Continuous	I_D	0.2	A
	Pulsed	I_{DM}	0.4	A
Power Dissipation	SOT-89	P_D	1.3	W
	SOT-23-3		0.3	W
Junction Temperature		T_J	+150	°C
Storage Temperature		T_{STG}	-55 ~ +150	°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. T_J=+25°C ~ +150°C.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-89	θ_{JA}	180	°C/W
	SOT-23-3		416	°C/W

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

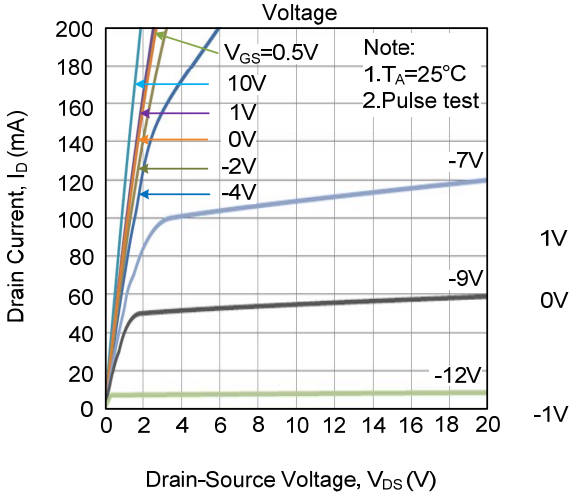
■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSX}	I_D=250μA, V_{GS}=-30V	150			V
Drain-Source Leakage Current		$I_{D(OFF)}$	V_{DS}=150V, V_{GS}=-30V			10	μA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{GS}=+30V, V_{DS}=0V			+100	nA
	Reverse		V_{GS}=-30V, V_{DS}=0V			-100	nA
ON CHARACTERISTICS							
Gate to Source Cut Off Voltage		$V_{GS(OFF)}$	V_{DS}=20V, I_D=8.0μA	-13		-21	V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=25V, V_{GS}=0V	200			mA
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=0V, I_D=200mA			22	Ω
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{GS}=-15V, V_{DS}=25V, f=1.0MHz		1.5		pF
Output Capacitance		C_{OSS}			6.8		pF
Reverse Transfer Capacitance		C_{RSS}			2.4		pF
SWITCHING PARAMETERS							
Turn-ON Delay Time		$t_{D(ON)}$	V_{GS}=-15~0V, V_{DD}=30V, I_D=200mA, R_G=20Ω		54		ns
Rise Time		t_R			33		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			46		ns
Fall-Time		t_F			37		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Drain-Source Diode Forward Voltage		V_{SD}	I_{SD}=200mA, V_{GS}=-10V			1.4	V

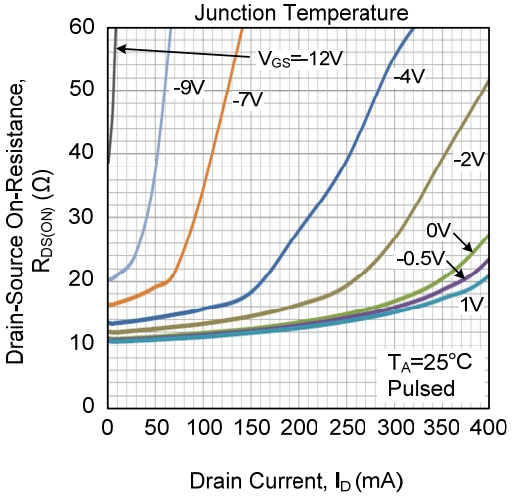
Notes: 1. Repetitive rating, pulse width limited by maximum junction temperature.
2. Pulse width ≤ 380μs; duty cycle ≤ 2%.

■ TYPICAL CHARACTERISTICS

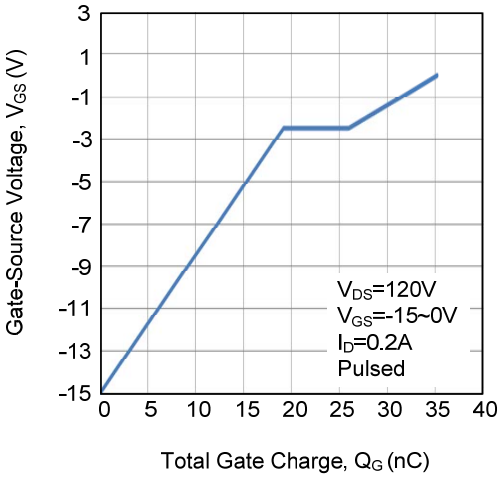
Drain Current vs. Drain-Source Voltage



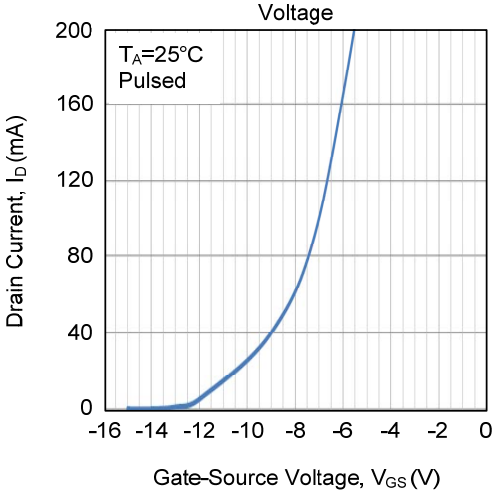
Drain-Source On-Resistance vs. Junction Temperature



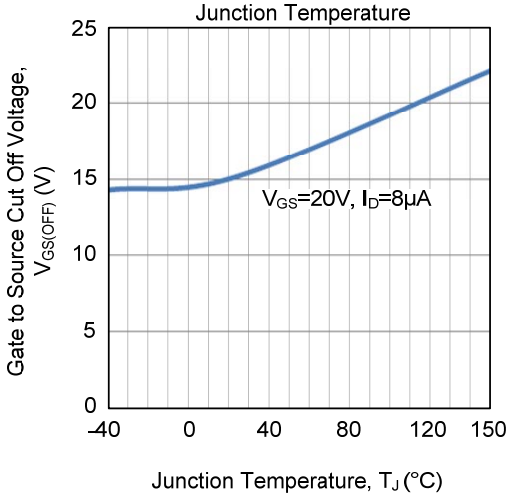
Gate Charge Characteristics



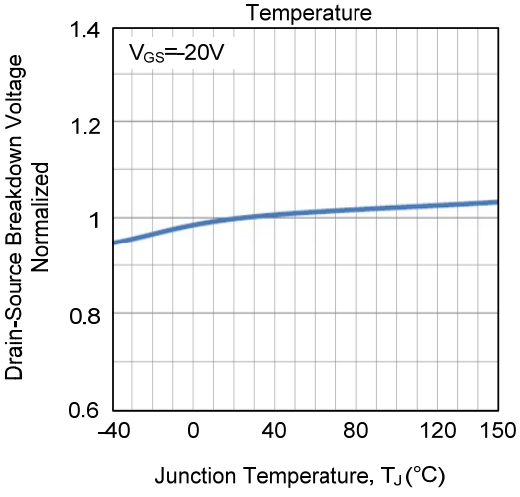
Drain Current vs. Gate-Source Voltage



Gate to Source Cut Off Voltage vs. Junction Temperature



Breakdown Voltage vs. Junction Temperature



■ TYPICAL CHARACTERISTICS (Cont.)