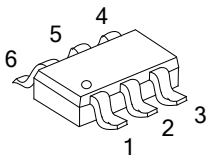
UTT1P20

Power MOSFET

-1A, -200V P-CHANNEL POWER MOSFET



SOT-26

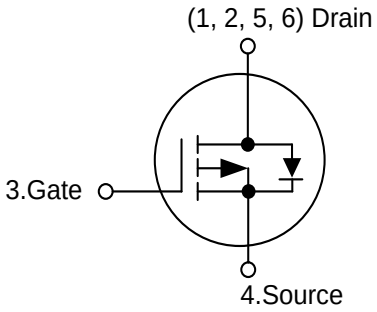
■ DESCRIPTION

The UTC **UTT1P20** is a P-channel power MOSFET using UTC's advanced technology to provide the customers with high switching speed, cost-effectiveness and a minimum on-state resistance. It can also withstand high energy in the avalanche.

■ FEATURES

* $R_{DS(ON)} \leq 1.4\Omega$ @ V_{GS}=-10V, I_D=-0.5A
* Low capacitance
* Low gate charge
* Fast switching capability
* Avalanche energy specified

■ SYMBOL



■ ORDERING INFORMATION

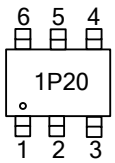
Ordering Number		Package	Pin Assignment						Packing
Lead Free	Halogen Free		1	2	3	5	5	6	
UTT1P20L-AG6-R	UTT1P20G-AG6-R	SOT-26	D	D	G	S	D	D	Tape Reel

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

UTT1P20G-AG6-R
(1)Packing Type
(2)Package Type
(3)Green Package

(1) R: Tape Reel
(2) AG6: SOT-26
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	-200	V
Gate-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current	I_D	-1	A
Pulsed Drain Current (Note 2)	I_{DM}	-2	A
Power Dissipation	P_D	2.4	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. Repetitive Rating: Pulse width limited by maximum junction temperature.

■ THERMAL DATA

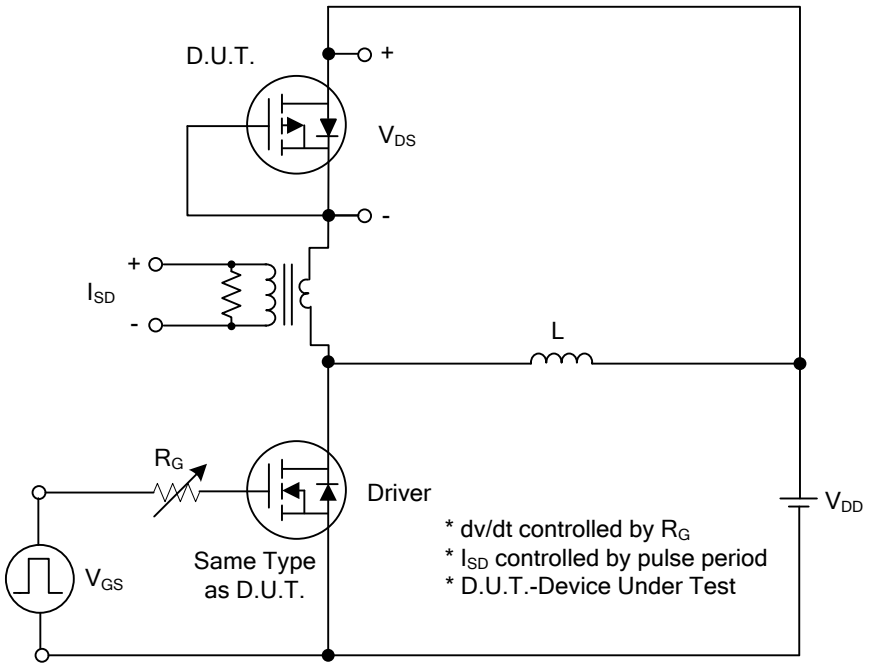
PARAMETER	SYMBOL	RATING	UNIT
Junction to Ambient	θ_{JA}	115	°C/W
Junction to Case	θ_{JC}	52	°C/W

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

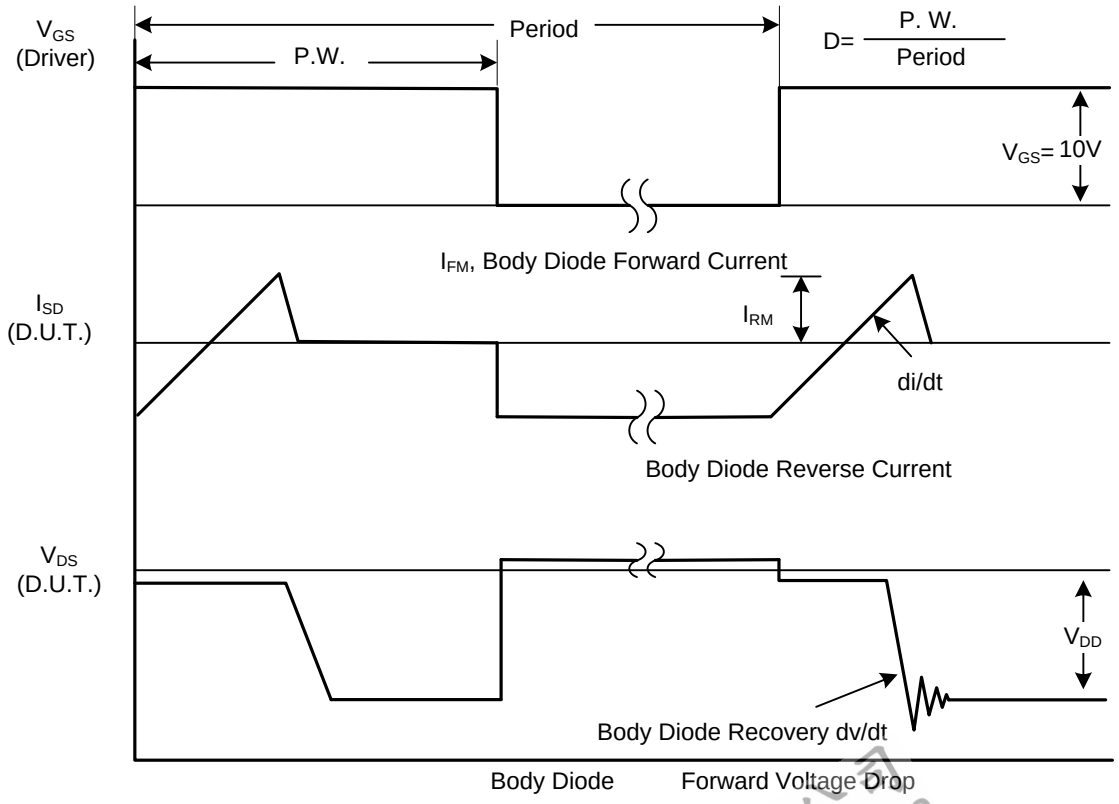
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0 V, I_D=-250μA	-200			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-200V, V_{GS}=0V			-10	μA
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=-250μA	-2.0		-4.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-0.5A			1.4	Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{DS}=-25V, V_{GS}=0V, f=1.0MHz		557		pF
Output Capacitance	C_{OSS}			40		pF
Reverse Transfer Capacitance	C_{RSS}			234		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	V_{DS}=-100V, V_{GS}=-10V, I_D=-1A I_G=-1mA (Note 1, 2)		13.7		nC
Gate Source Charge	Q_{GS}			4.2		nC
Gate Drain Charge	Q_{GD}			0.9		nC
Turn-ON Delay Time	$t_{D(ON)}$	V_{DD}=-100V, V_{GS}=-10V, I_D=-1A, R_G=3.3Ω (Note 1, 2)		4.5		ns
Turn-ON Rise Time	t_R			16		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			16.5		ns
Turn-OFF Fall-Time	t_F			21		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I_S				-1	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				-2	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=-1A			-1.4	V

Notes: 1. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%.
2. Essentially independent of operating temperature.

■ TEST CIRCUITS AND WAVEFORMS

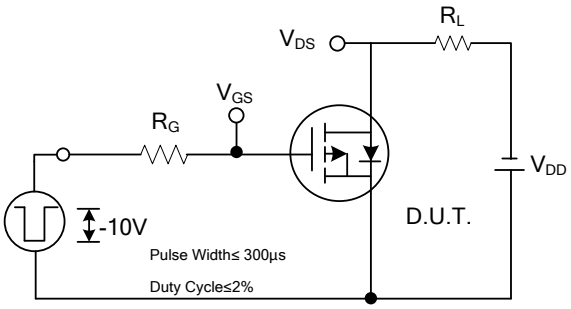


Peak Diode Recovery dv/dt Test Circuit

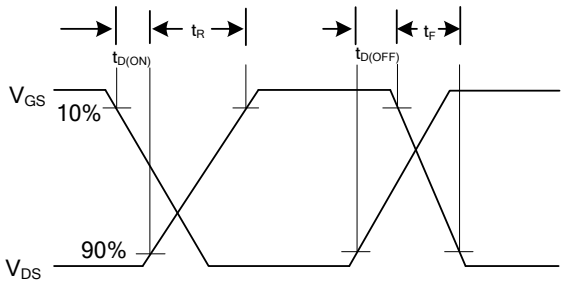


Peak Diode Recovery dv/dt Waveforms

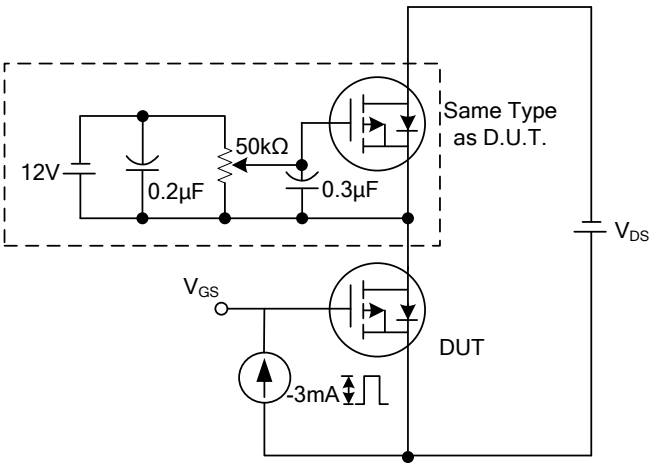
■ TEST CIRCUITS AND WAVEFORMS



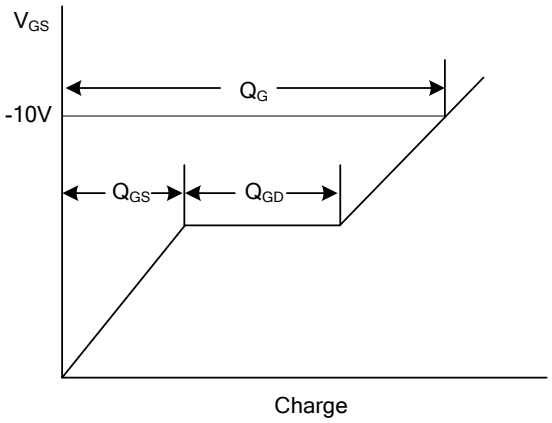
Switching Test Circuit



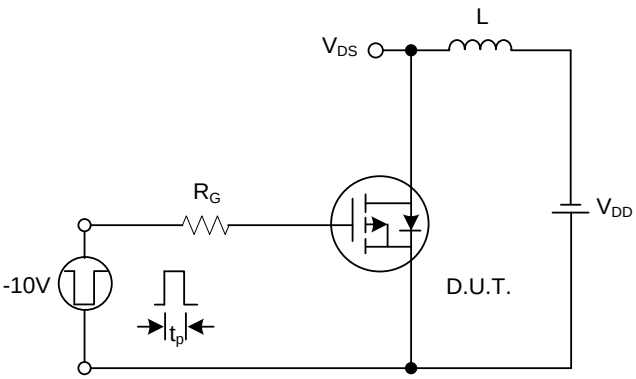
Switching Waveforms



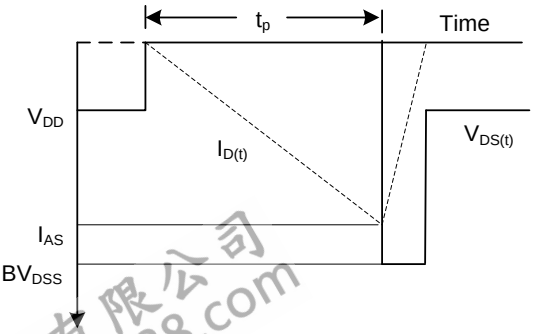
Gate Charge Test Circuit



Gate Charge Waveform



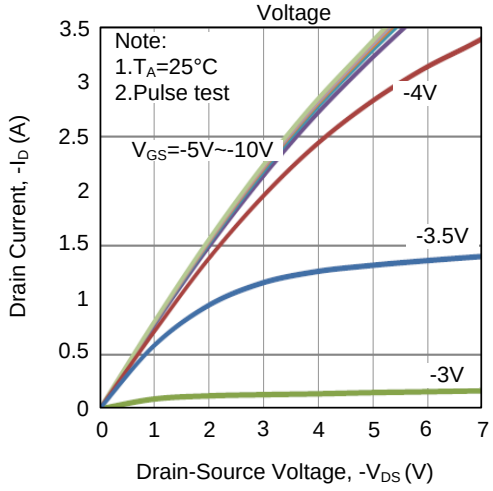
Unclamped Inductive Switching Test Circuit



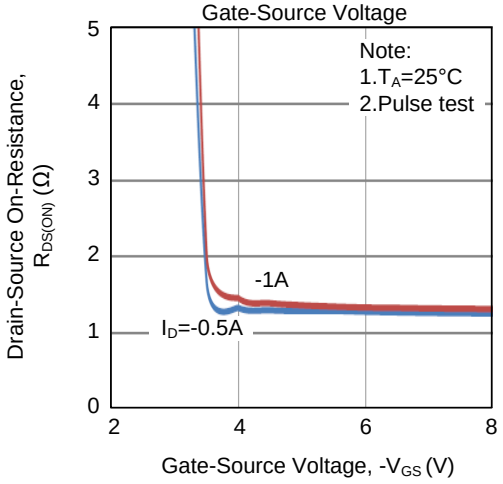
Unclamped Inductive Switching Waveforms

■ TYPICAL CHARACTERISTICS

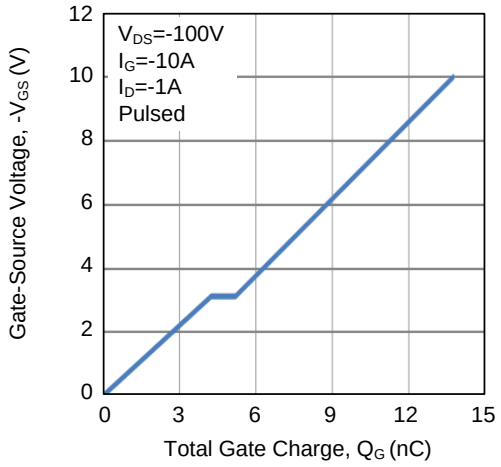
Drain Current vs. Drain-Source Voltage



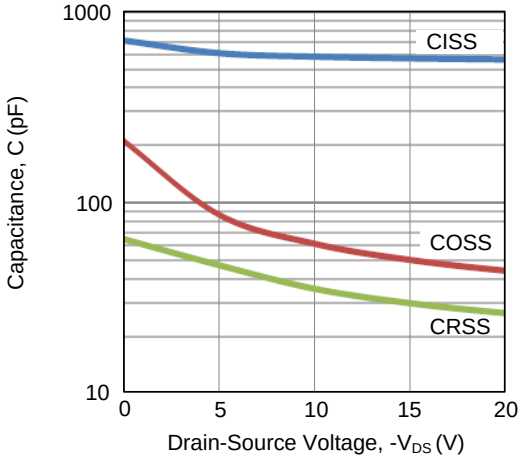
Drain-Source On-Resistance vs. Gate-Source Voltage



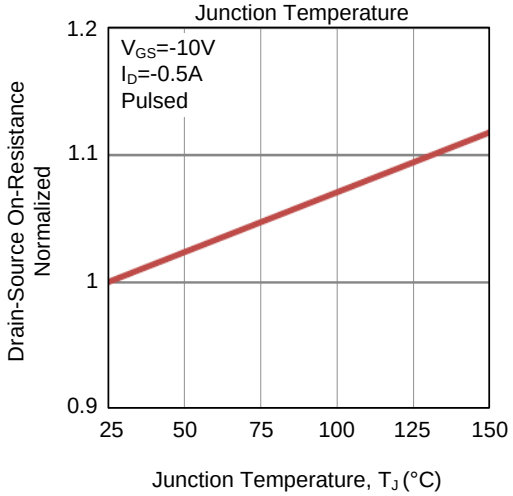
Gate Charge Characteristics



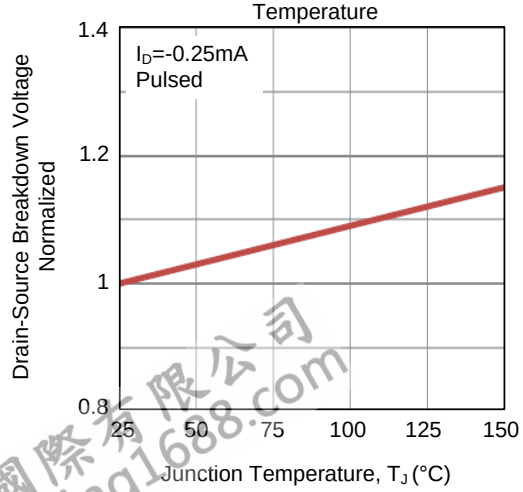
Capacitance Characteristics



Drain-Source On-Resistance vs. Junction Temperature

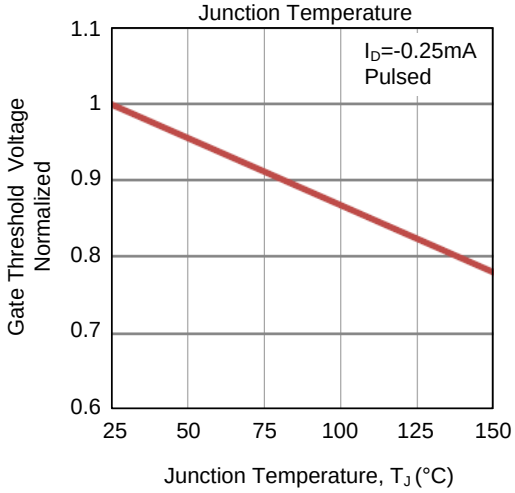


Breakdown Voltage vs. Junction Temperature

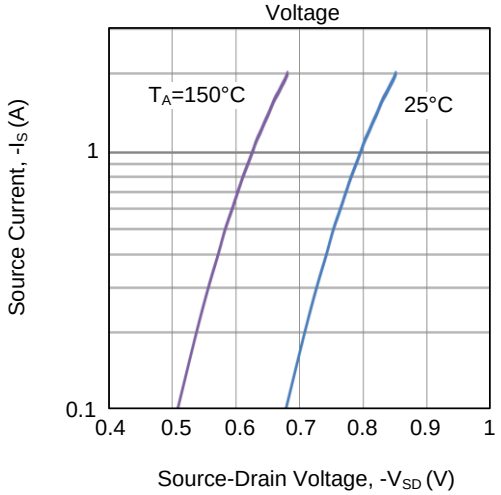


■ TYPICAL CHARACTERISTICS (Cont.)

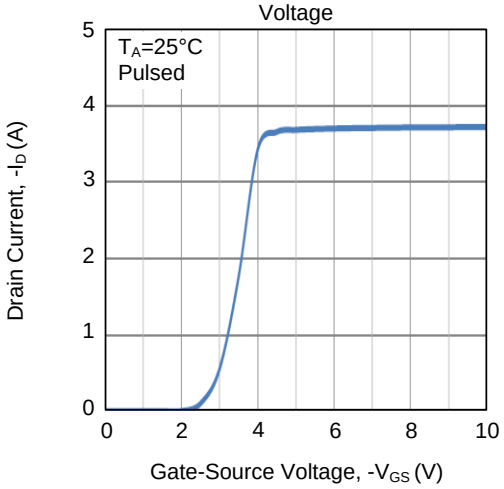
Gate Threshold Voltage vs. Junction Temperature



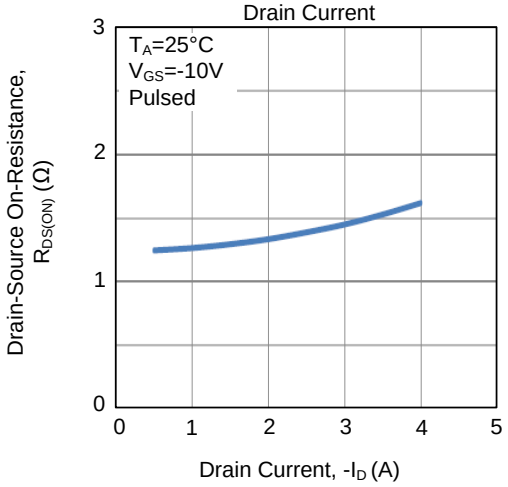
Source Current vs. Source-Drain Voltage



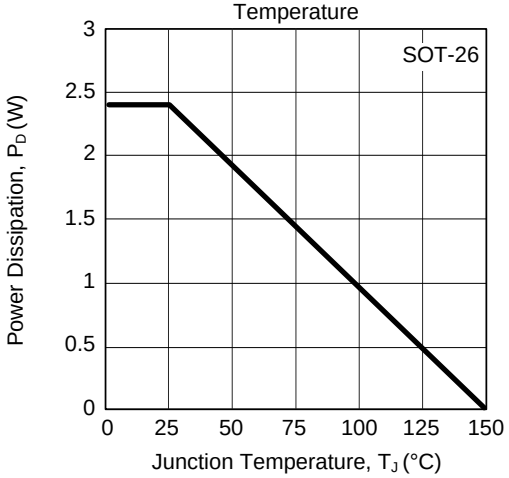
Drain Current vs. Gate-Source Voltage



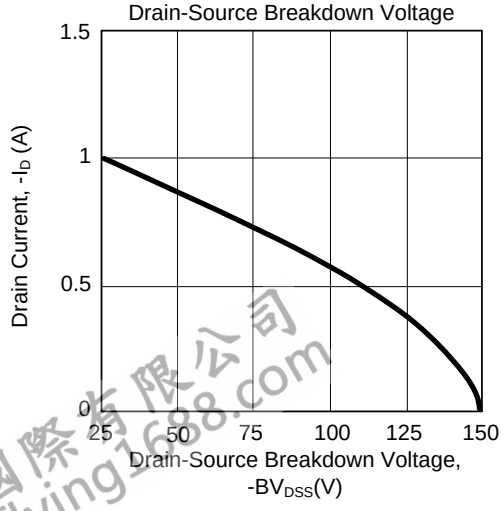
Drain-Source On-Resistance vs. Drain Current



Power Dissipation vs. Junction Temperature



Drain Current vs. Drain-Source Breakdown Voltage



■ TYPICAL CHARACTERISTICS (Cont.)