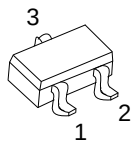
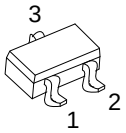
UT2340

Power MOSFET

-4.2A, -20V P-CHANNEL ENHANCEMENT MODE



SOT-23
(EIAJ SC-59)



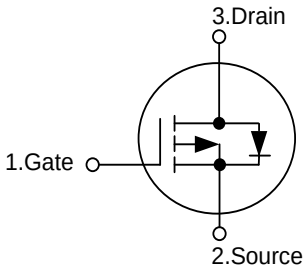
SOT-23-3
(JEDEC TO-236)

■ DESCRIPTION

The UTC **UT2340** is P-Channel enhancement mode Power MOSFET, designed in serried ranks with fast switching speed, low on-resistance and favorable stabilization.

Used in commercial and industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

■ SYMBOL



■ ORDERING INFORMATION

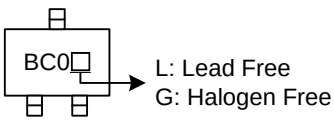
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT2340L-AE2-R	UT2340G-AE2-R	SOT-23-3	G	S	D	Tape Reel
UT2340L-AE3-R	UT2340G-AE3-R	SOT-23	G	S	D	Tape Reel

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

UT2340G-AE2-R

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

■ MARKING



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

PARAMETER		SYMBOL	RATING	UNITS
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±8	V
Continuous Drain Current (Note 3) (T_A=25°C)		I_D	-4.2	A
Pulsed Drain Current (Note 1, 2)		I_{DM}	-10	A
Power Dissipation	SOT-23-3	P_D	0.83	W
	SOT-23		1.38	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 DATA

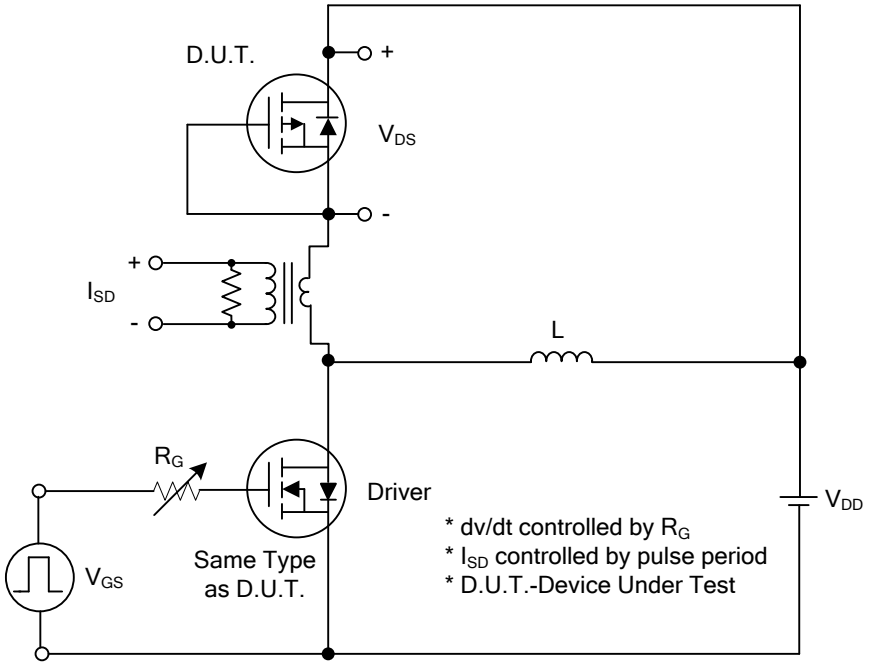
PARAMETER		SYMBOL	RATING	UNIT
Junction to Ambient (Note 3)	SOT-23-3	θ_{JA}	150	°C/W
	SOT-23		90	°C/W

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

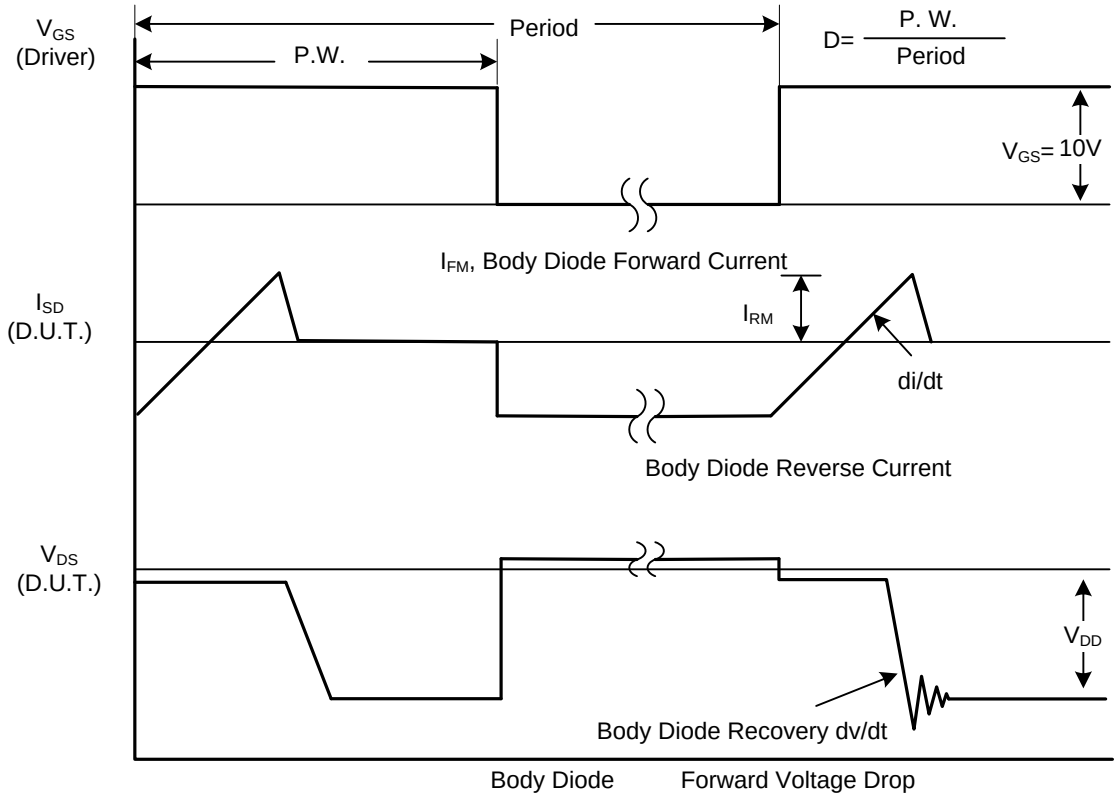
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=-250μA	-20			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-20V, V_{GS}=0V			-1	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=-250uA	-0.5		-1.2	V
Drain-Source On-State Resistance (Note 2)	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-4.2A			70	mΩ
		V_{GS}=-2.5V, I_D=-3.4A			110	mΩ
		V_{GS}=-1.8V, I_D=-2.0A			210	mΩ
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{ISS}	V_{GS}=0V, V_{DS}=-20V, f=1MHz		932		pF
Output Capacitance	C_{OSS}			100		pF
Reverse Transfer Capacitance	C_{RSS}			87		pF
SWITCHING CHARACTERISTICS						
Total Gate Charge (Note 2)	Q_G	V_{DS}=-4V, V_{GS}=-4.5V, I_D=-3.5A		12.5		nC
Gate-Source Charge	Q_{GS}			2.5		nC
Gate-Drain Charge	Q_{GD}			1.8		nC
Turn-ON Delay Time (Note 2)	$t_{D(ON)}$	V_{DS}=-4V, V_{GS}=-4.5V, I_D=-1A, R_G=6Ω, R_D=4Ω		10		ns
Turn-ON Rise Time	t_R			39		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			42		ns
Turn-OFF Fall Time	t_F			28		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Continuous Drain-Source Diode Forward Current	I_S				-4.2	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				-10	A
Drain-Source Diode Forward Voltage(Note2)	V_{SD}	V_{GS}=0V, I_S=-1.2A			-1.2	V

Notes: 1. Pulse width limited by $T_{J(MAX)}$
2. Pulse width ≤300μs, duty cycle≤2%.
3. Surface mounted on 1 in^2 copper pad of FR4 board; 270°C/W when mounted on min.

■ TEST CIRCUITS AND WAVEFORMS

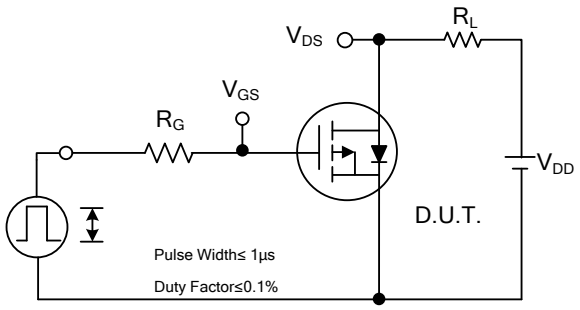


Peak Diode Recovery dv/dt Test Circuit

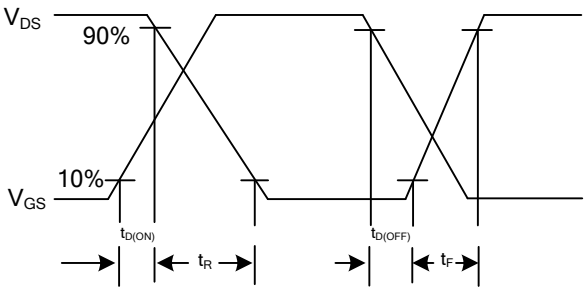


Peak Diode Recovery dv/dt Waveforms

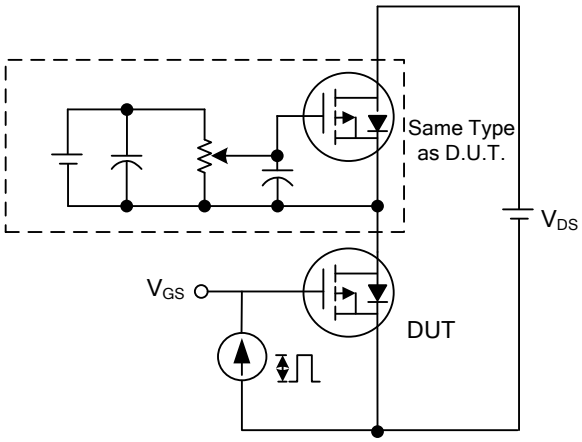
■ TEST CIRCUITS AND WAVEFORMS



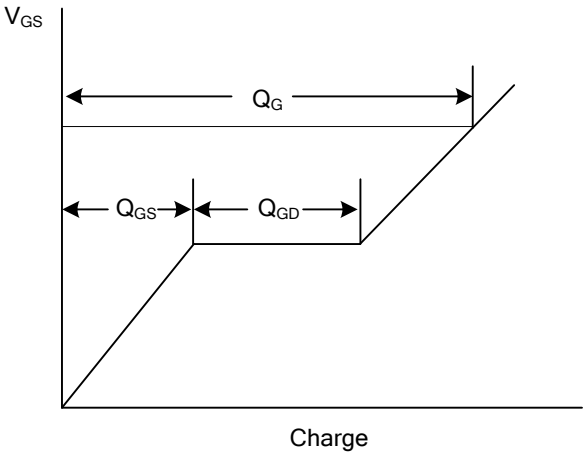
Switching Test Circuit



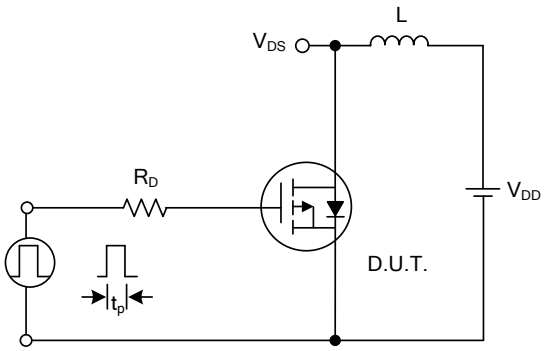
Switching Waveforms



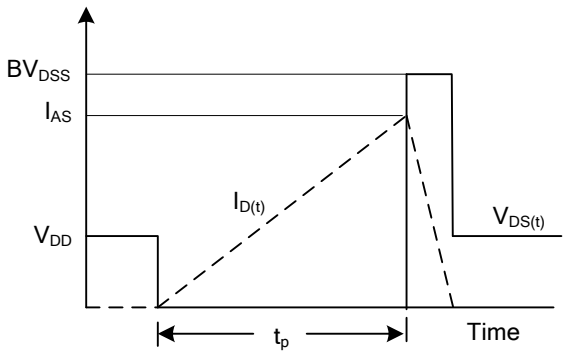
Gate Charge Test Circuit



Gate Charge Waveform



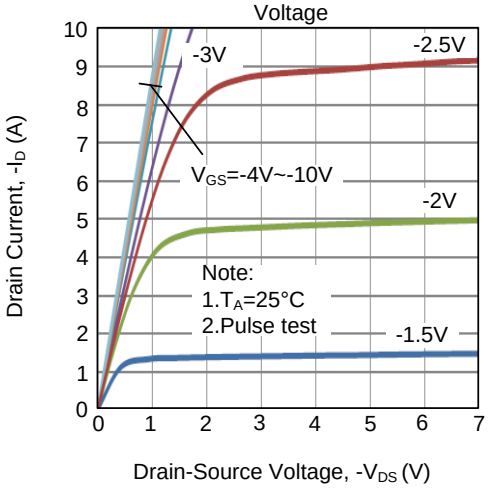
Unclamped Inductive Switching Test Circuit



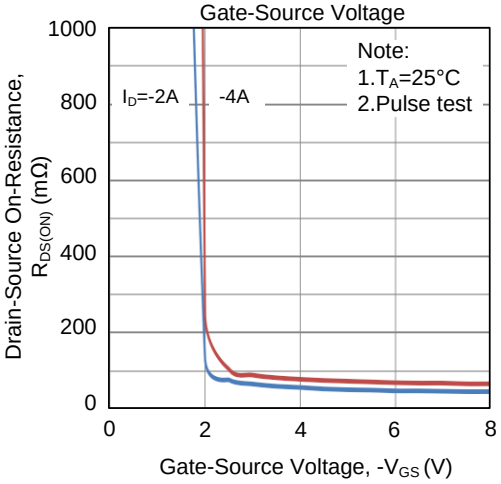
Unclamped Inductive Switching Waveforms

■ TYPICAL CHARACTERISTICS

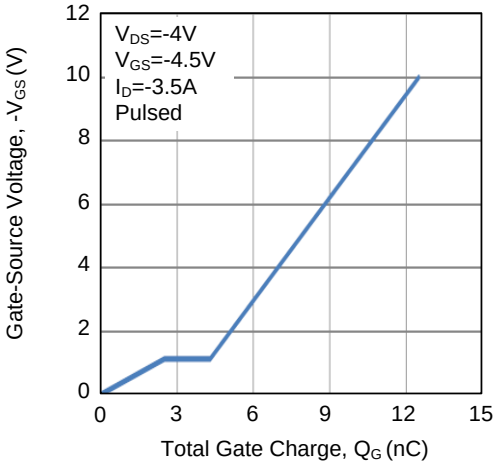
Drain Current vs. Drain-Source Voltage



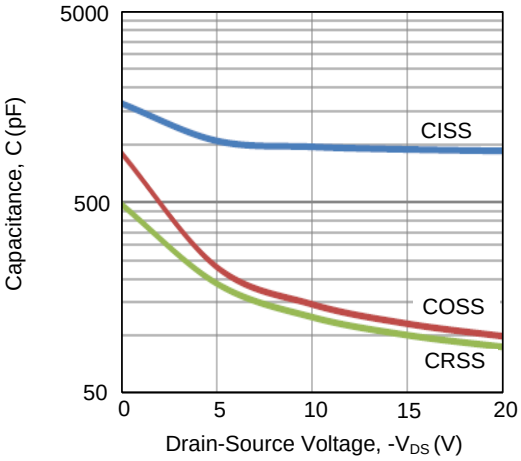
Drain-Source On-Resistance vs. Gate-Source Voltage



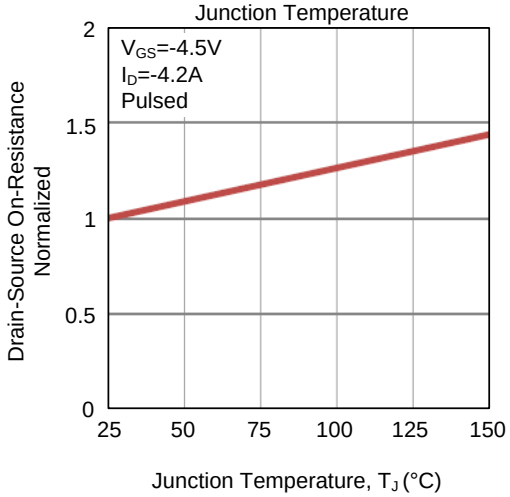
Gate Charge Characteristics



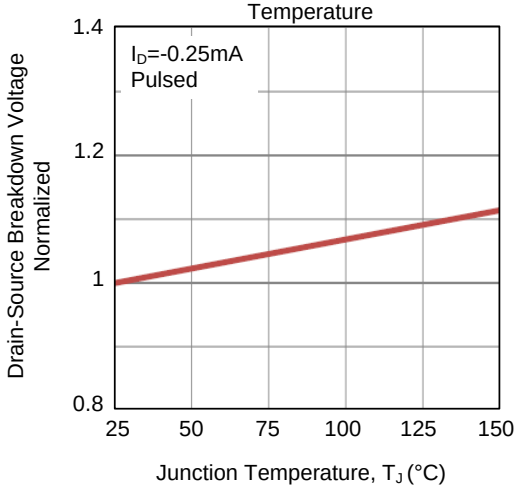
Capacitance Characteristics



Drain-Source On-Resistance vs. Junction Temperature

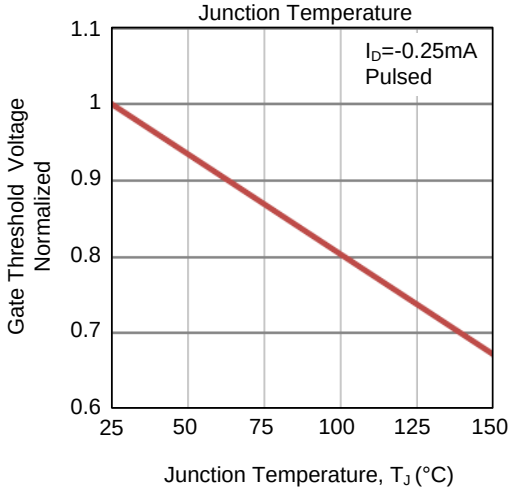


Breakdown Voltage vs. Junction Temperature

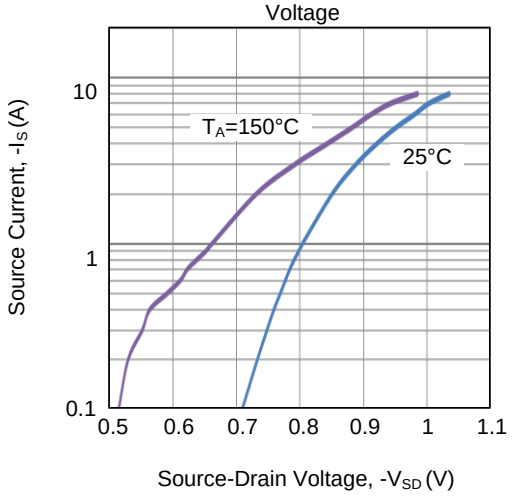


■ TYPICAL CHARACTERISTICS (Cont.)

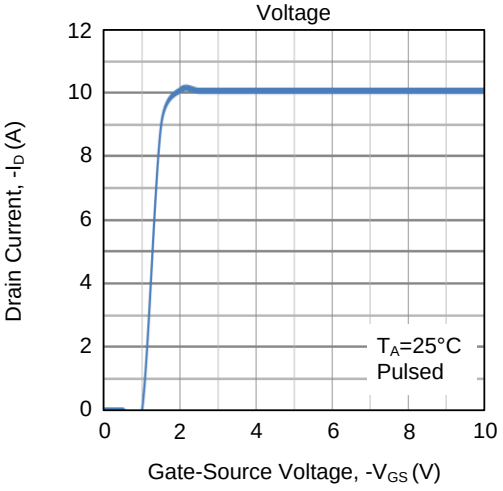
Gate Threshold Voltage vs. Junction Temperature



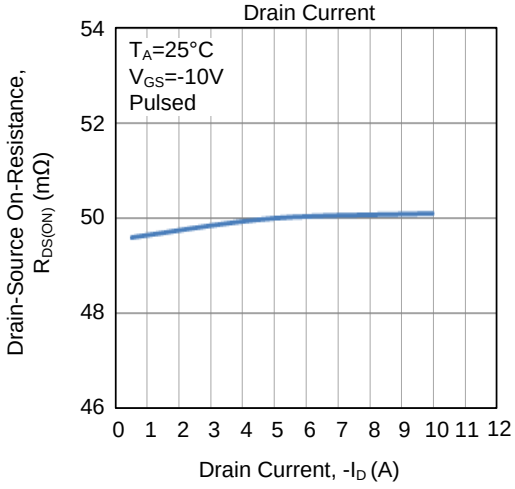
Source Current vs. Source-Drain Voltage



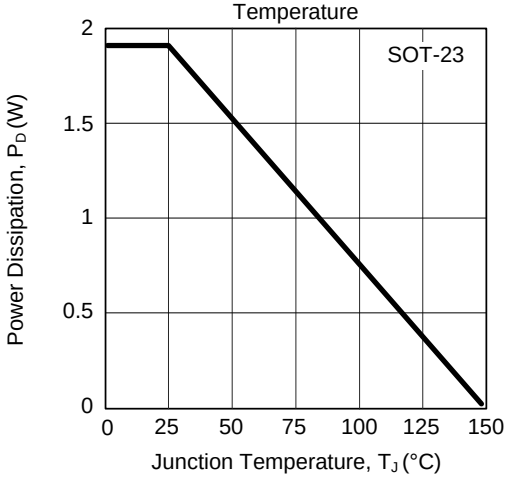
Drain Current vs. Gate-Source Voltage



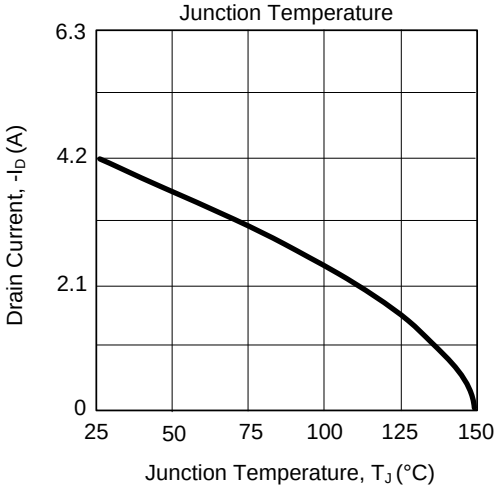
Drain-Source On-Resistance vs. Drain Current



Power Dissipation vs. Junction Temperature



Drain Current vs. Junction Temperature



■ TYPICAL CHARACTERISTICS (Cont.)