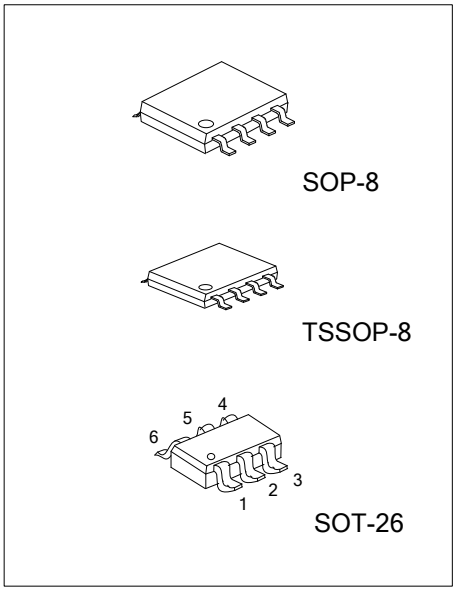
UT8205A

Power MOSFET

N-CHANNEL ENHANCEMENT MODE



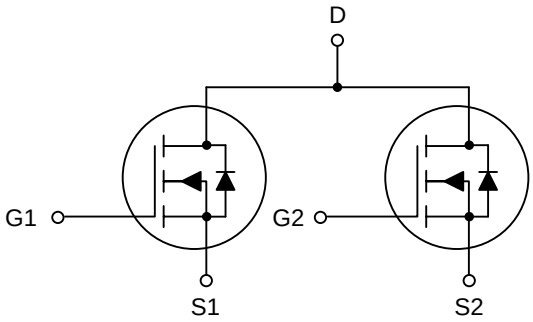
■ DESCRIPTION

The **UT8205A** uses advanced technology to provide fast switching, low on-resistance and cost-effectiveness. This device is suitable for all commercial-industrial surface mount applications.

■ FEATURES

* SOT-26/TSSOP-8
  $R_{DS(ON)}$ ≤ 28 mΩ @ V_{GS}=4.5V, I_D=6.0A
  $R_{DS(ON)}$ ≤ 38 mΩ @ V_{GS}=2.5V, I_D=5.2A
* SOP-8
  $R_{DS(ON)}$ ≤ 32 mΩ @ V_{GS}=4.5V, I_D=6.0A
  $R_{DS(ON)}$ ≤ 45 mΩ @ V_{GS}=2.5V, I_D=5.2A
* Fast switching capability
* Avalanche energy Specified
* Improved dv/dt capability, high ruggedness

■ SYMBOL



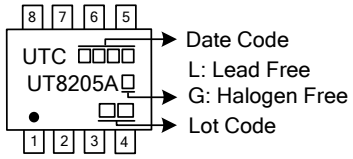
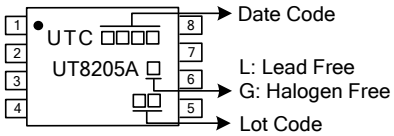
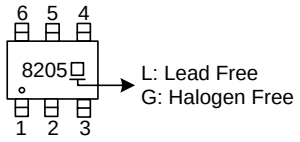
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UT8205AL-AL6-R	UT8205AG-AG6-R	SOT-26	S1	D	S2	G2	D	G1	-	-	Tape Reel
UT8205AL-S08-R	UT8205AG-S08-R	SOP-8	D	S1	S1	G1	G2	S2	S2	D	Tape Reel
UT8205AL-P08-R	UT8205AG-P08-R	TSSOP-8	D	S1	S1	G1	G2	S2	S2	D	Tape Reel

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

UT8205AG-AG6-R (1) Packing Type (2) Package Type (3) Green Package	(1) R: Tape Reel (2) AG6: SOT-26, P08: TSSOP-8, S08: SOP-8 (3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

SOP-8	TSSOP-8	SOT-26
		

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	20	V
Gate-Source Voltage		V_{GSS}	±8	V
Drain Current (Note 3)	Continuous	I_D	6	A
	Pulsed	I_{DM}	20	A
Power Dissipation (T_A=25°C) (Note 2)	SOT-26	P_D	1.14	W
	SOP-8		1.6	W
	TSSOP-8		1.5	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.
3. Pulse Test : Pulse width≤300μs, Duty cycle≤2%.

■ THERMAL DATA (Note)

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-26	θ_{JA}	110	°C/W
	SOP-8		78	°C/W
	TSSOP-8		83	°C/W

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

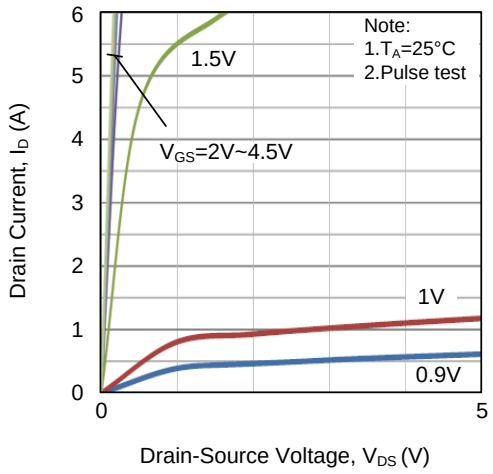
■ ELECTRICAL CHARACTERISTICS (T_J =25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS}=0V, I_D=250μA	20			V
Breakdown Voltage Temperature Coefficient		$\frac{\Delta BV_{DSS}}{\Delta T_J}$	I_D=1mA, Reference to 25°C		0.03		V/°C
Drain-Source Leakage Current		I_{DSS}	V_{DS}=20V, V_{GS}=0V,			1	μA
Gate-Source Leakage Current		I_{GSS}	V_{GS}=±8V			±100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	0.5		1.5	V
Drain-Source On-State Resistance (Note)	SOT-26 TSSOP-8	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=6.0A			28	mΩ
			V_{GS}=2.5V, I_D=5.2A			38	mΩ
	SOP-8		V_{GS}=4.5V, I_D=6.0A			32	mΩ
			V_{GS}=2.5V, I_D=5.2A			45	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{DS}=20V, V_{GS}=0V, f=1.0MHz		370		pF
Output Capacitance		C_{OSS}			78		pF
Reverse Transfer Capacitance		C_{RSS}			73		pF
SWITCHING PARAMETERS							
Total Gate Charge(Note)		Q_G	V_{DS} =20V, V_{GS} =5V, I_D =6.0A		8.4		nC
Gate Source Charge		Q_{GS}			1		nC
Gate Drain Charge		Q_{GD}			1.8		nC
Turn-ON Delay Time (Note)		$t_{D(ON)}$	V_{GS}=5V, V_{DS}=10V, R_D=10Ω, R_G=6Ω, I_D=6A		3.6		ns
Turn-ON Rise Time		t_R			2.7		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			19		ns
Turn-OFF Fall-Time		t_F			7.6		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Drain-Source Diode Forward Voltage (Note)		V_{SD}	I_S=1.7A, V_{GS}=0V			1.2	V
Diode Continuous Forward Current		I_S	V_D=V_G, V_S=1.3V			1.54	A

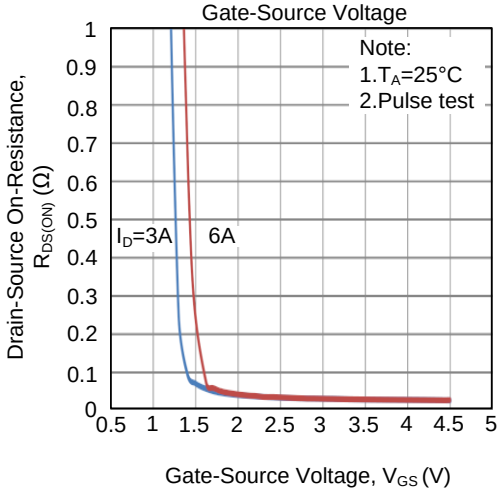
Note: Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%.

■ TYPICAL CHARACTERISTICS

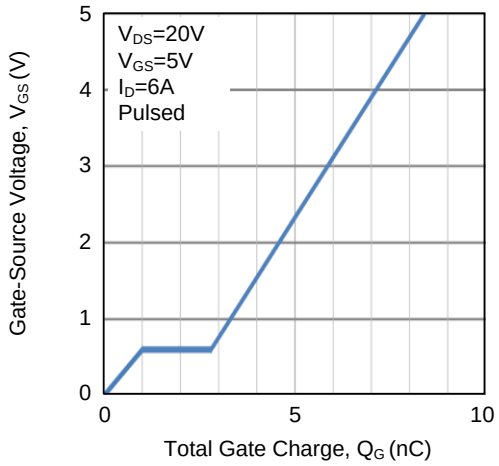
Drain Current vs. Drain-Source Voltage



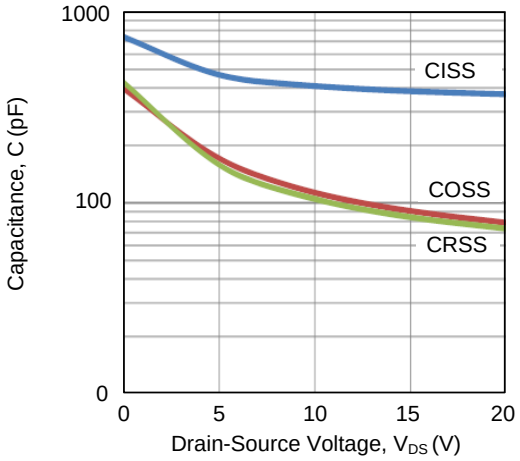
Drain-Source On-Resistance vs. Gate-Source Voltage



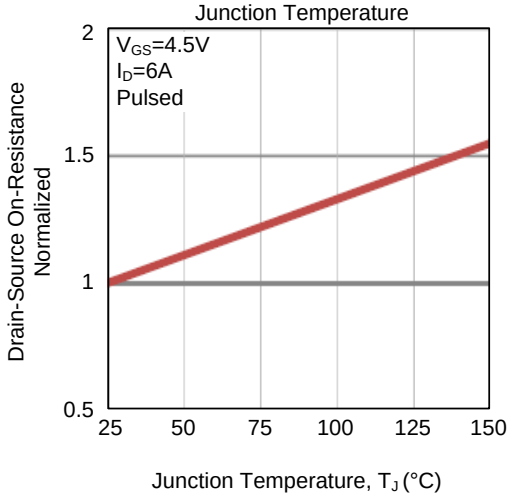
Gate Charge Characteristics



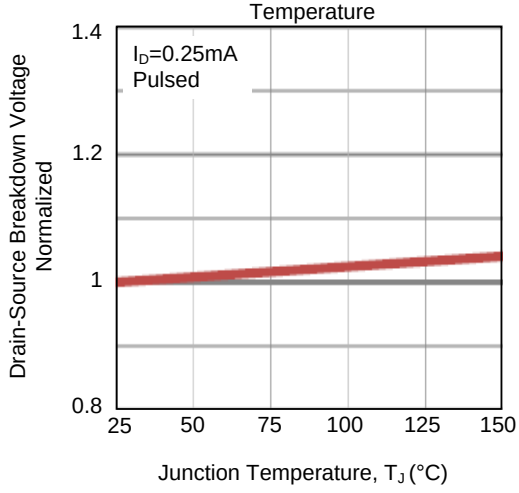
Capacitance Characteristics



Drain-Source On-Resistance vs. Junction Temperature

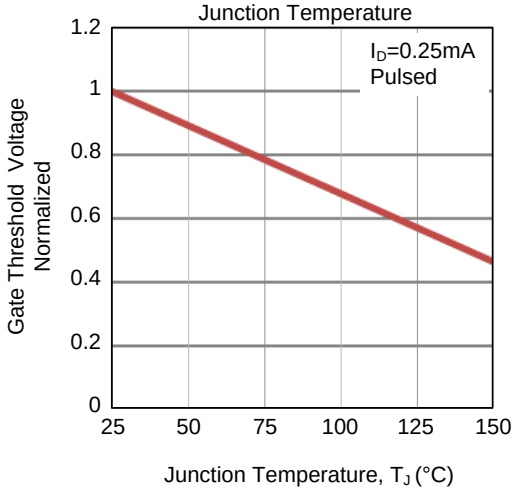


Breakdown Voltage vs. Junction Temperature

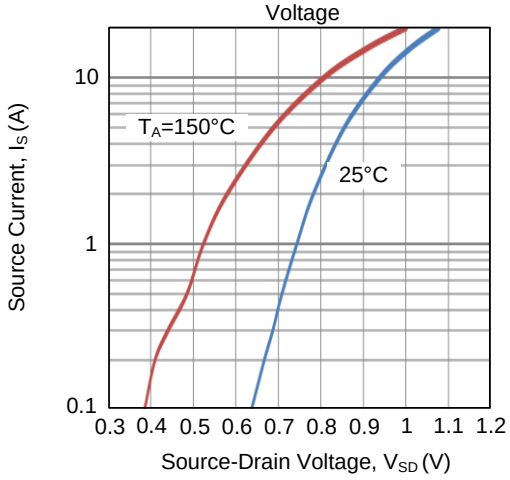


■ TYPICAL CHARACTERISTICS (Cont.)

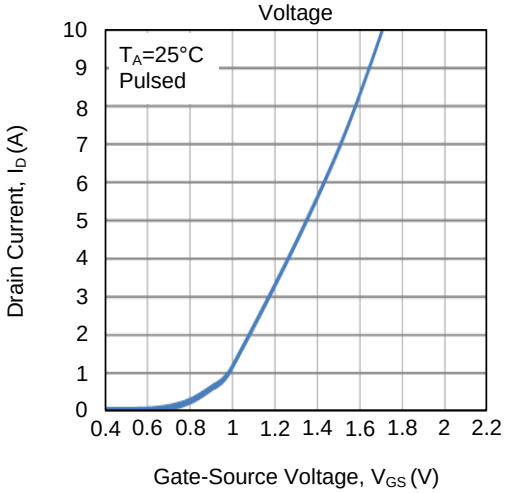
Gate Threshold Voltage vs. Junction Temperature



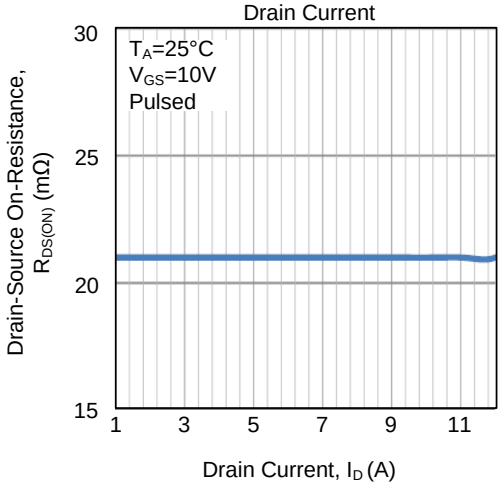
Source Current vs. Source-Drain Voltage



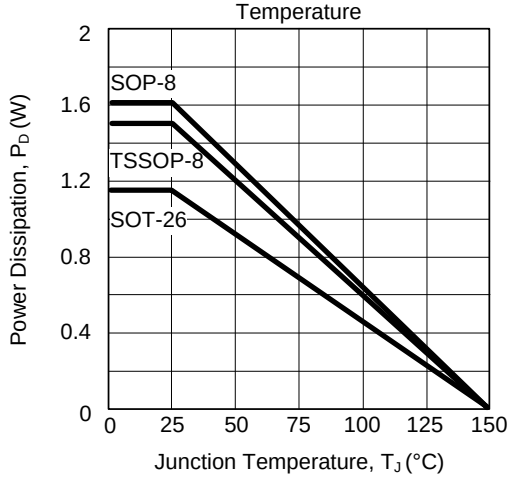
Drain Current vs. Gate-Source Voltage



Drain-Source On-Resistance vs. Drain Current



Power Dissipation vs. Junction Temperature



Drain Current vs. Junction Temperature