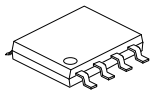
UD4606Q

Power MOSFET

DUAL ENHANCEMENT MODE (N-CHANNEL/P-CHANNEL)



SOP-8

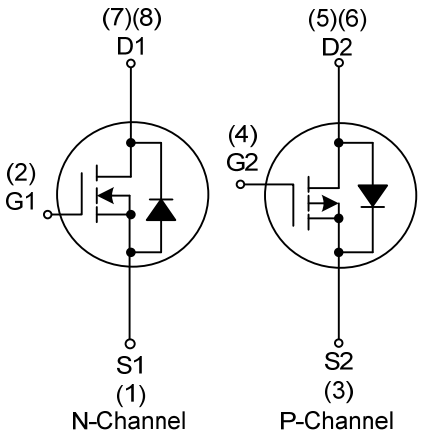
■ DESCRIPTION

The UTC **UD4606Q** provides excellent $R_{DS(ON)}$ and low gate charge by using advanced trench technology MOSFETs. The complementary MOSFETs may be help to form a level shifted high side switch and also for lots of other applications.

■ FEATURES

* N-Channel: 30V/6.9A
  $R_{DS(ON)}$ = 22.5 mΩ (typ.) @ V_{GS}=10V, I_D=6.9A
  $R_{DS(ON)}$ = 34.5 mΩ (typ.) @ V_{GS}=4.5V, I_D=5A
* P-Channel: -30V/-6A
  $R_{DS(ON)}$ = 37.5 mΩ (typ.) @ V_{GS}=-10V, I_D=-6A
  $R_{DS(ON)}$ = 44 mΩ (typ.) @ V_{GS}=-4.5V, I_D=-5A
* Reliable and rugged

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number	Package	Pin Assignment								Packing
		1	2	3	4	5	6	7	8	
UD4606QG-S08-R	SOP-8	S1	G1	S2	G2	D2	D2	D1	D1	Tape Reel

UD4606QG-S08-R

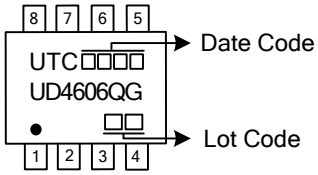
(1)Packing Type — (1) R: Tape Reel

(2)Package Type — (2) S08: SOP-8

(3)Green Package — (3) G: Halogen Free and Lead Free

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■ MARKING



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

N-CHANNEL

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	30	V
Gate-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current (Note2)	I_D	6.9	A
Pulsed Drain Current (Note2)	I_{DM}	30	A
Power Dissipation	P_D	2	W
Junction Temperature	T_J	+150	°C
Storage Temperature	T_{STG}	-55 ~ +150	°C

P-CHANNEL

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	-30	V
Gate-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current (Note 2)	I_D	-6	A
Pulsed Drain Current (Note 2)	I_{DM}	-30	A
Power Dissipation	P_D	2	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. Surface Mounted on 1in^2 pad area, t≤10sec

■ THERMAL DATA

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction to Ambient (Note)	θ_{JA}		67	80	°C/W

Note: Surface Mounted on 1in^2 pad area, t≤10sec

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

N-CHANNEL

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_{DS}=0V, V_{GS}=±20V			100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250uA	1	1.9	3	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=6.9A		22.5	28	mΩ
		V_{GS}=4.5V, I_D=5A		34.5	42	mΩ
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{ISS}	V_{GS}=0V,V_{DS}=15V,f=1.0MHz		680		pF
Output Capacitance	C_{OSS}			102		pF
Reverse Transfer Capacitance	C_{RSS}			77		pF
SWITCHING CHARACTERISTICS						
Turn-ON Delay Time (Note2)	$t_{D(ON)}$	V_{DS}=15V, V_{GS}=10V, R_G=3Ω, R_L=2.2Ω		4.6		ns
Turn-ON Rise Time	t_R			4.1		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			20.6		ns
Turn-OFF Fall Time	t_F			5.2		ns
Total Gate Charge (Note2)	Q_G	V_{DS}=15V, V_{GS}=10V, I_D=6.9A		13.8		nC
Gate-Source Charge	Q_{GS}			1.82		nC
Gate-Drain Charge	Q_{GD}			3.2		nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage(Note2)	V_{SD}	I_S=1A, V_{GS}=0V		0.76	1	V
Diode Continuous Forward Current (Note3)	I_S				3	A
Reverse Recovery Time	t_{RR}	I_{DS}=6.9A, dI/dt=100A/μs		16.5		ns
Reverse Recovery Charge	Q_{RR}			7.8		nC

■ LECTRICAL CHARACTERISTICS(Cont.)

P-CHANNEL

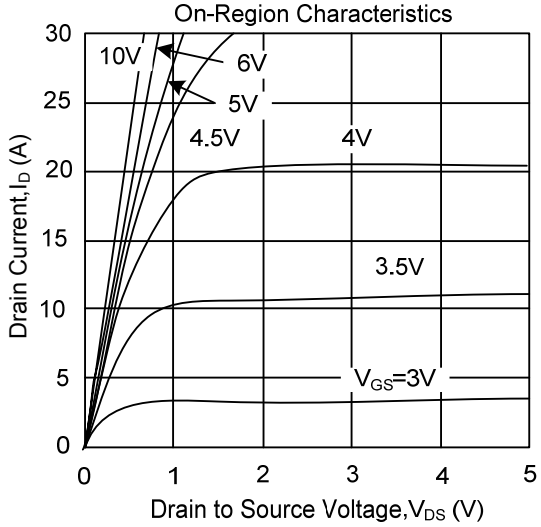
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=-250uA	-30			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-24V, V_{GS}=0V			-1	uA
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=-250uA	-1.2	-2	-2.4	V
Drain-Source On-State Resistance (Note2)	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-6A		37.5	45	mΩ
		V_{GS}=-4.5V, I_D=-5A		44	58	mΩ
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{ISS}	V_{GS}=0V,V_{DS}=-15V,f=1.0MHz		920		pF
Output Capacitance	C_{OSS}			190		pF
Reverse Transfer Capacitance	C_{RSS}			122		pF
SWITCHING CHARACTERISTICS						
Turn-ON Delay Time (Note2)	$t_{D(ON)}$	V_{DS}=-15V, V_{GS}=-10V, R_G=3Ω, R_L=2.7Ω		7.7		ns
Turn-ON Rise Time	t_R			5.7		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			20.2		ns
Turn-OFF Fall Time	t_F			9.5		ns
Total Gate Charge (Note2)	Q_G	V_{DS}=-15V, V_{GS}=-10V, I_D=-6A		18.5		nC
Gate-Source Charge	Q_{GS}			2.7		nC
Gate-Drain Charge	Q_{GD}			4.5		nC
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage(Note2)	V_{SD}	I_S=-1A, V_{GS}=0V		-0.76	-1	V
Diode Continuous Forward Current (Note3)	I_S				-4.2	A
Reverse Recovery Time	t_{RR}	I_{DS}=-6A, dI/dt=100A/μs		20		ns
Reverse Recovery Charge	Q_{RR}			8.8		nC

Notes: 1. Pulse width limited by $T_{J(MAX)}$
2. Pulse width ≤300μs, duty cycle ≤2%.
3. Surface Mounted on 1in^2 pad area, t≤10sec.

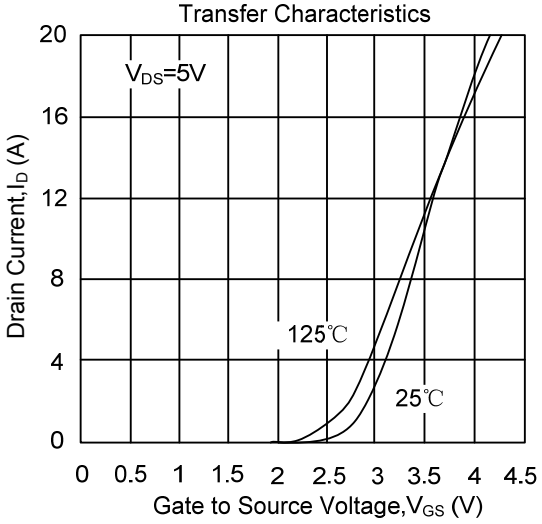
■ TYPICAL CHARACTERISTICS

N-CHANNEL

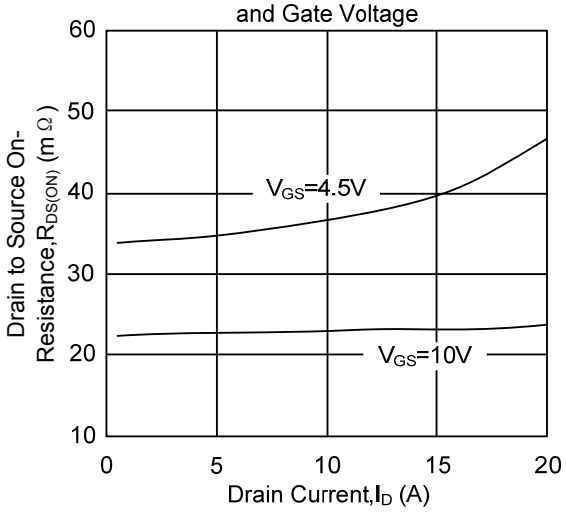
On-Region Characteristics



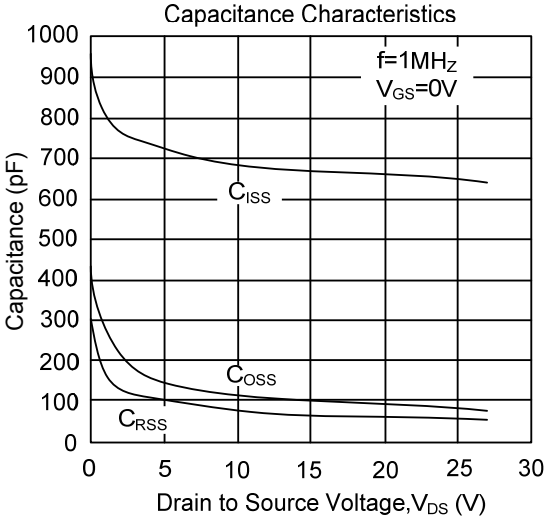
Transfer Characteristics



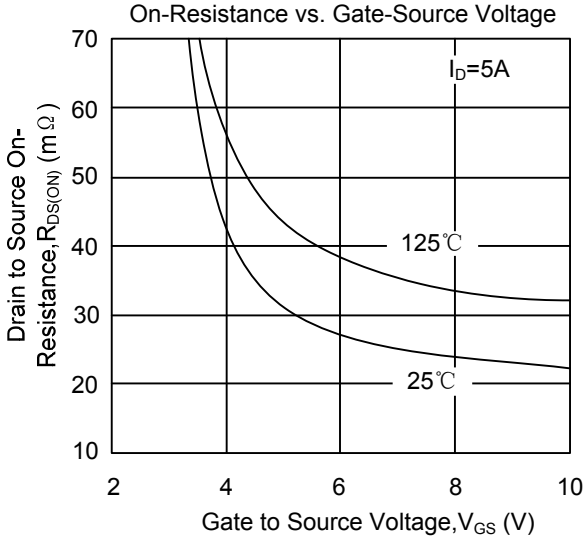
On-Resistance vs. Drain Current and Gate Voltage



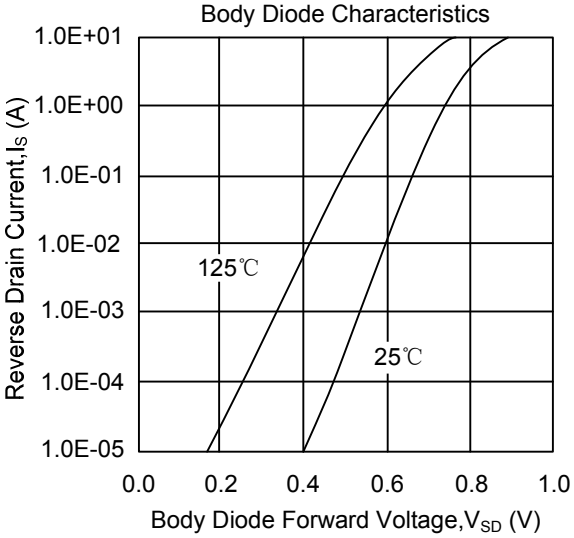
Capacitance Characteristics



On-Resistance vs. Gate-Source Voltage

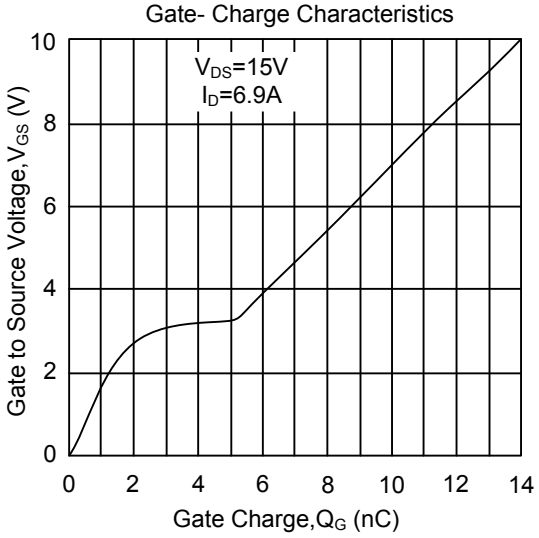


Body Diode Characteristics

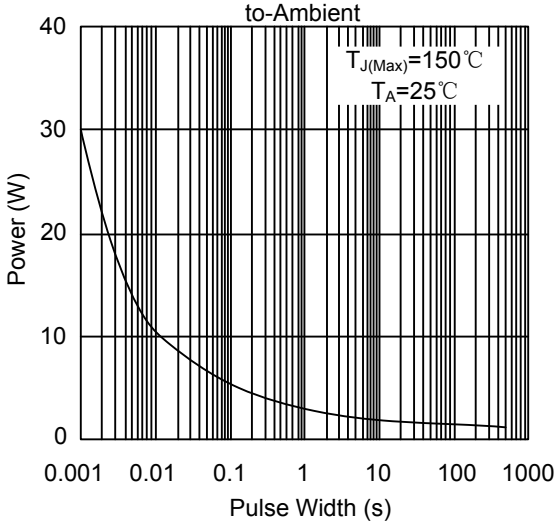


■ TYPICAL CHARACTERISTICS(Cont.)

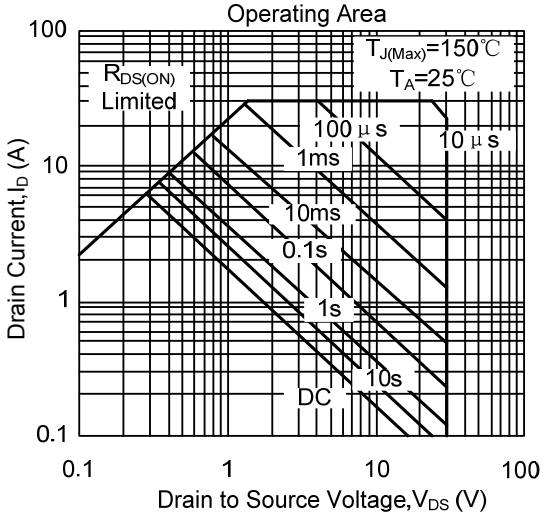
Gate- Charge Characteristics



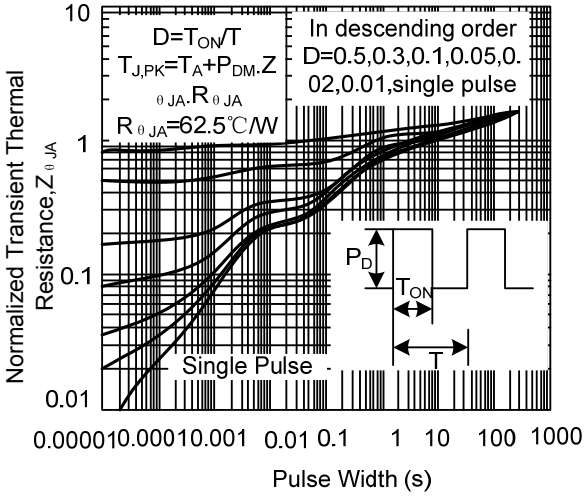
Single Pulse Power Rating Junction-to-Ambient



Maximum Forward Biased Safe Operating Area

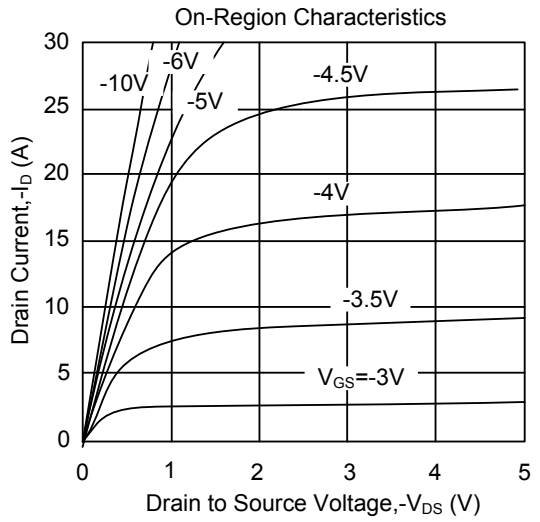


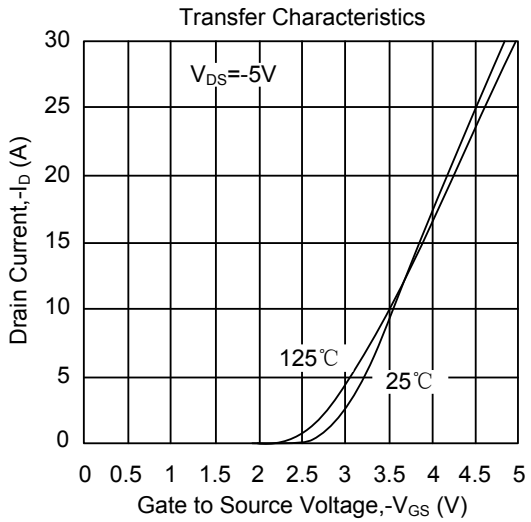
Normalized Maximum Transient Thermal Impedance

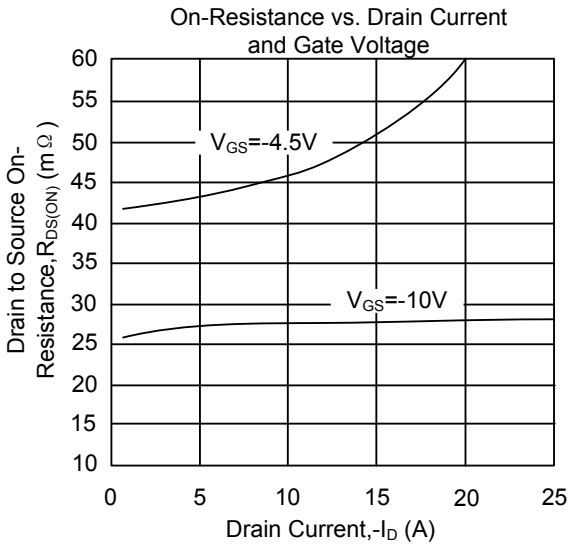


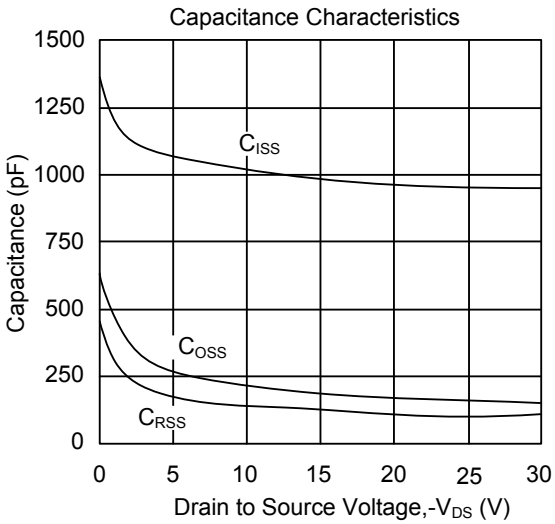
■ TYPICAL CHARACTERISTICS(Cont.)

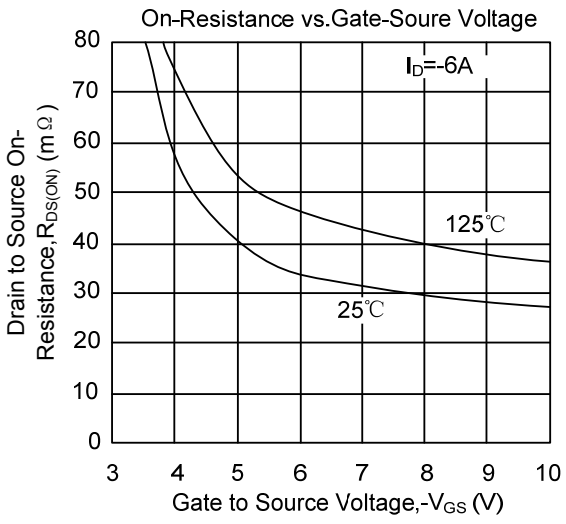
P-CHANNEL

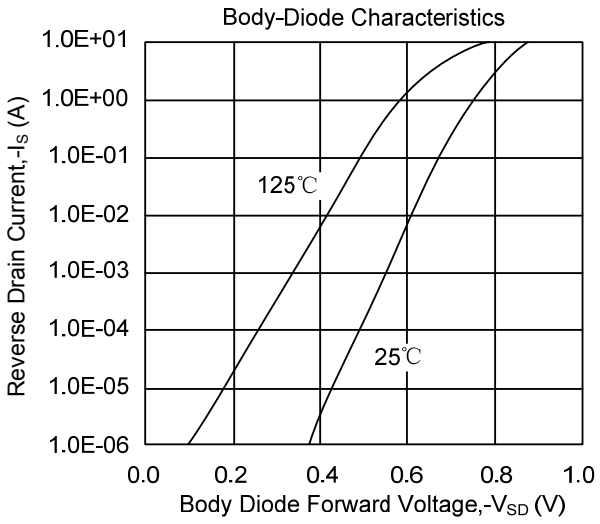






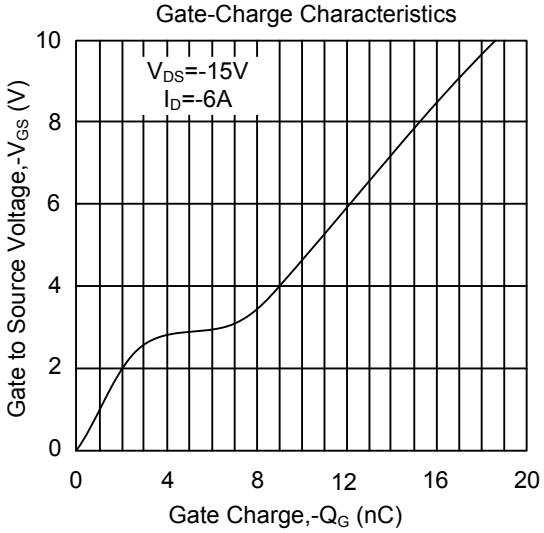




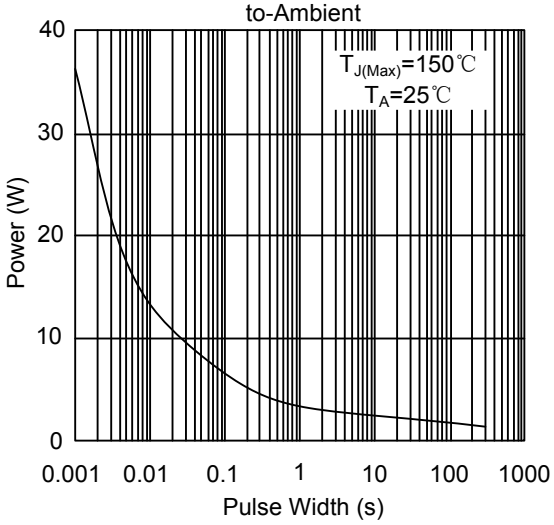


■ TYPICAL CHARACTERISTICS(Cont.)

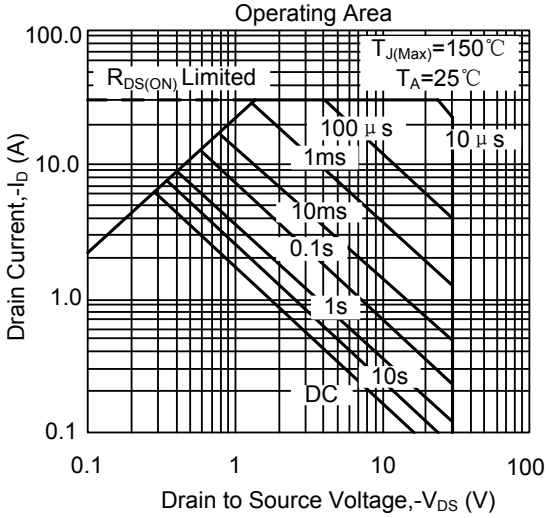
Gate-Charge Characteristics



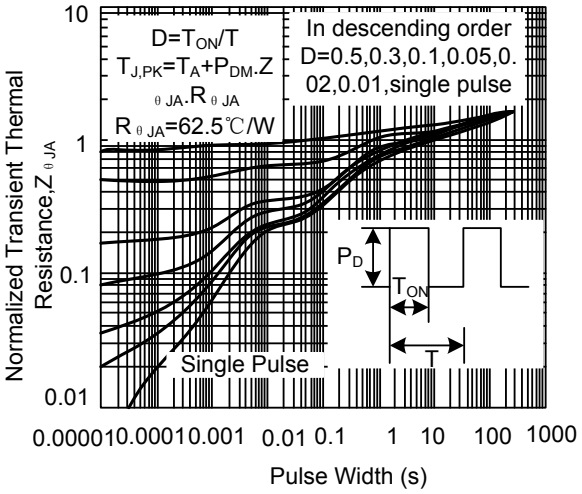
Single Pulse Power Rating Junction-to-Ambient



Maximum Forward Biased Safe Operating Area

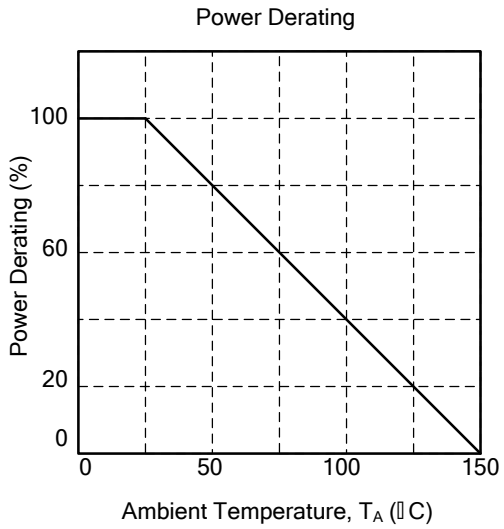


Normalized Maximum Transient Thermal Impedance



■ TYPICAL CHARACTERISTICS(Cont.)

For N / P-CHANNEL



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