



UTG10N120LSS2

Insulated Gate Bipolar Transistor

1200V, SMPS N-CHANNEL IGBT

DESCRIPTION

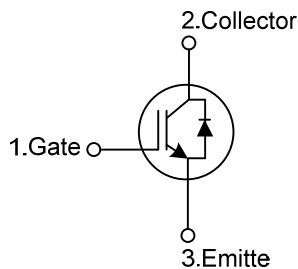
The UTC **UTG10N120LSS2** is a N-channel IGBT. it uses UTC's advanced technology to provide customers with high input impedance, high switching speed and low conduction loss, etc.

The UTC **UTG10N120LSS2** is suitable for high voltage switching, high frequency switch mode power supplies.

FEATURES

- * High switching speed
- * High avalanche ruggedness
- * Low saturation voltage: $V_{CE(SAT), Typ.} = 1.47V @ I_C=10A, V_{GE}=15V$ ($T_C = 25^\circ C$)

SYMBOL



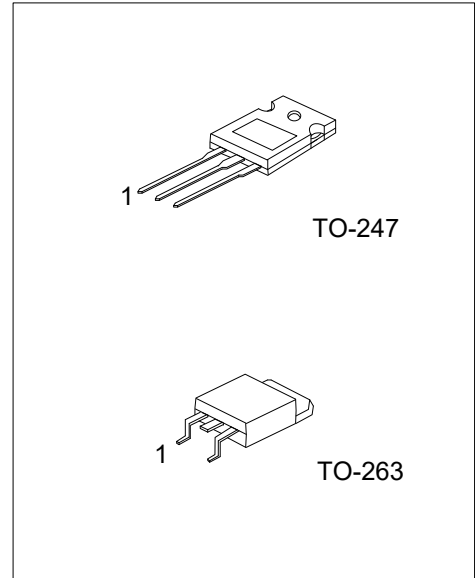
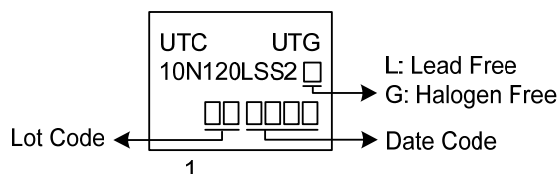
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UTG10N120LSS2L-T47-T	UTG10N120LSS2G-T47-T	TO-247	G	C	E	Tube
UTG10N120LSS2L-TQ2-T	UTG10N120LSS2G-TQ2-T	TO-263	G	C	E	Tube
UTG10N120LSS2L-TQ2-R	UTG10N120LSS2G-TQ2-R	TO-263	G	C	E	Tape Reel

Note: Pin Assignment: G: Gate C: Collector E: Emitter

UTG10N120LSS2G-TQ2-T	(1)Packing Type	(1) T: Tube, R: Tape Reel
	(2)Package Type	(2) TQ2: TO-263, T47: TO-247
	(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	RATINGS	UNIT
Collector-Emitter Voltage		V _{CES}	1200	V
Gate-Emitter Voltage		V _{GES}	±20	V
Transient Gate-Emitter Voltage (t _p < 5 ms)			±25	V
Continuous Collector Current	T _C =25°C	I _C	20	A
	T _C =100°C		10	A
Collector Current Pulsed (Note 1)		I _{CM}	40	A
Diode Forward Current	T _C =25°C	I _F	20	A
	T _C =100°C		10	A
Avalanche Energy (Note 3)		E _{AS}	6.2	mJ
Short Circuit Withstand Time V _{GE} = 15V, V _{CC} ≤ 200V Allowed number of short circuits < 1000 Time between short circuits: ≥ 1.0s T _{VJ} = 25°C		t _{SC}	3	μs
Power Dissipation (T _C =25°C)	TO-263	P _D	96	W
	TO-247		245	W
Operating Junction Temperature		T _J	-40 ~ +150	°C
Storage Temperature Range		T _{STG}	-55 ~ +150	°C

Notes: 1. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

Absolute maximum ratings are those values beyond which the device could be permanently damaged.

2. Pulse width limited by maximum junction temperature.

3. L = 500μH, I_{CE} = 20A, T_J = 25°C

■ THERMAL DATA

PARAMETER		SYMBOL	RATING	UNIT
Junction to Case	TO-263	θ_{JC}	1.3	°C/W
	TO-247		0.51	°C/W

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Collector-Emitter Breakdown Voltage	BV _{CES}		1200			V
Collector Cut-Off Current	I _{CES}	V _{CE} =1200V, V _{GE} =0V			5	μA
G-E Leakage Current	I _{GES}	V _{CE} =0V, V _{GE} =±20V			±250	nA
ON CHARACTERISTICS						
Gate to Emitter Threshold Voltage	V _{GE(TH)}	I _C =250μA, V _{CE} =V _{GE}	4.5		7.5	V
Collector to Emitter Saturation Voltage	V _{CE(SAT)}	I _C =10A, V _{GE} =15V	T _C =25°C	1.47	2.2	V
			T _C =125°C	2.1		V
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{IES}	V _{CE} =25V, V _{GE} =0V, f=1MHz		910		pF
Output Capacitance	C _{OES}			49		pF
Reverse Transfer Capacitance	C _{RES}			16		pF
SWITCHING CHARACTERISTICS						
Total Gate Charge	Q _G	V _{CE} =600V, I _C =10A, V _{GE} =15V		54		nC
Gate-Emitter Charge	Q _{GE}			18		nC
Gate-Collector Charge	Q _{GC}			24		nC
Turn-On Delay Time	t _{DON}	V _{CC} =600V, I _C =10A, R _G =5Ω, V _{GE} =0~15V, L=500μH		8.2		ns
Rise Time	t _R			15		ns
Turn-Off Delay Time	t _{DOFF}			33		ns
Fall Time	t _F			295		ns
Turn-On Switching Loss	E _{ON}			0.55		mJ
Turn-Off Switching Loss	E _{OFF}			0.79		mJ
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Forward Voltage Drop	V _F	I _F =10A			2.6	V
Reverse Recovery Time	t _{rr}	I _F =10A, dI/dt=100A/μS		52		ns
Reverse Recovery Charge	Q _{rr}			0.556		μC

■ TEST CIRCUIT AND WAVEFORMS

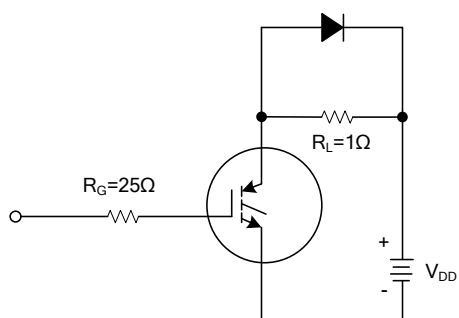


Fig 1. INDUCTIVE SWITCHING TEST CIRCUIT

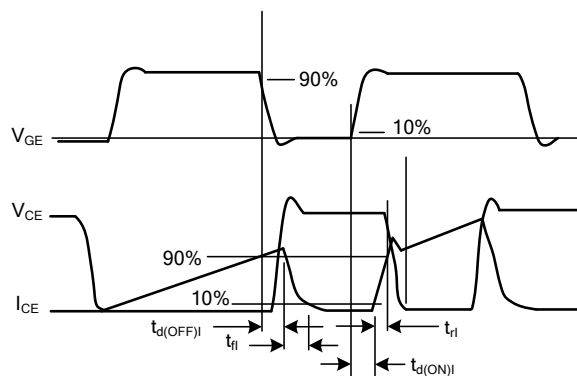
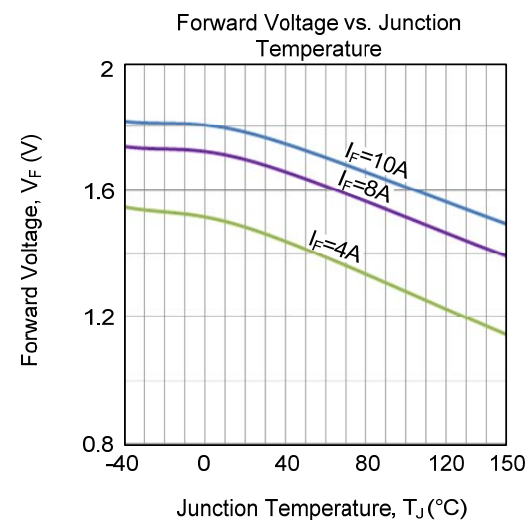
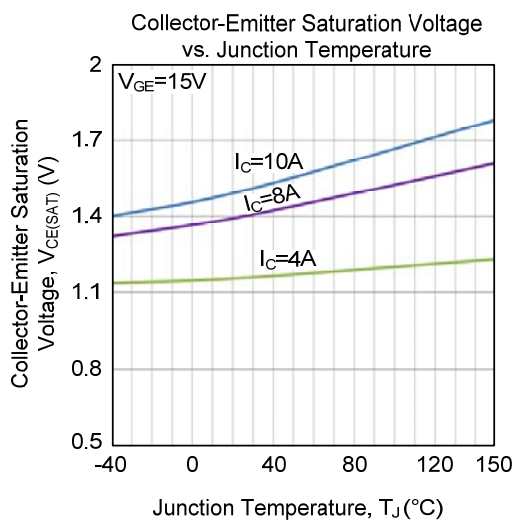
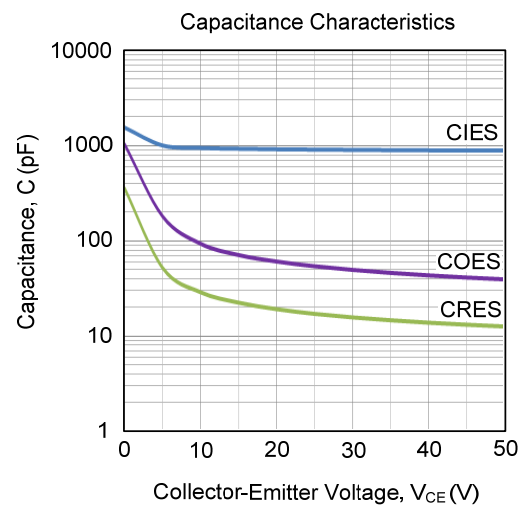
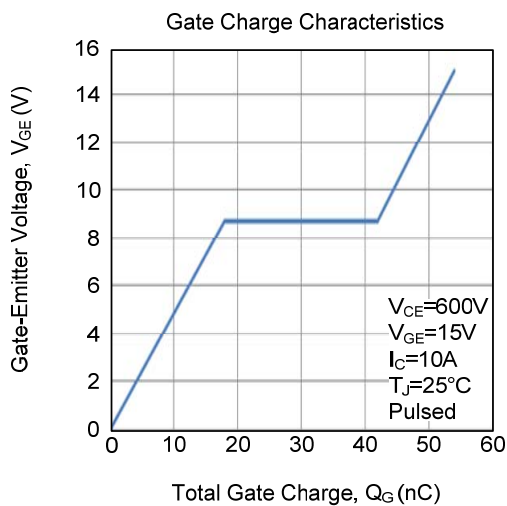
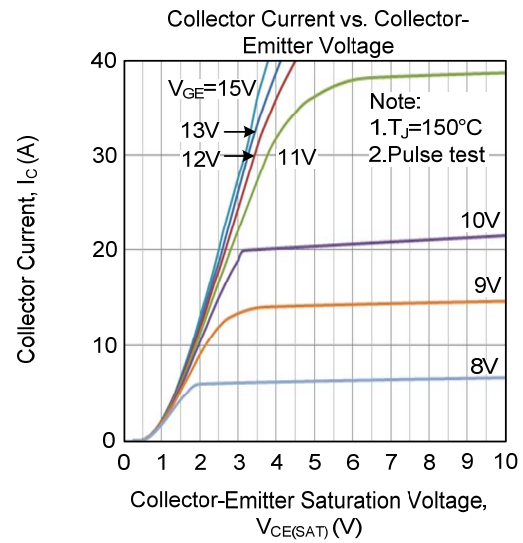
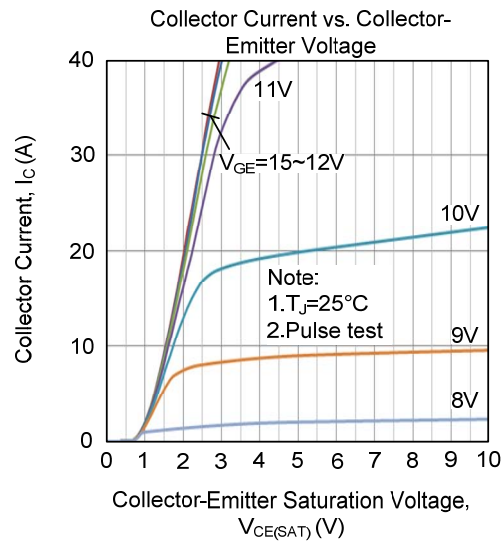
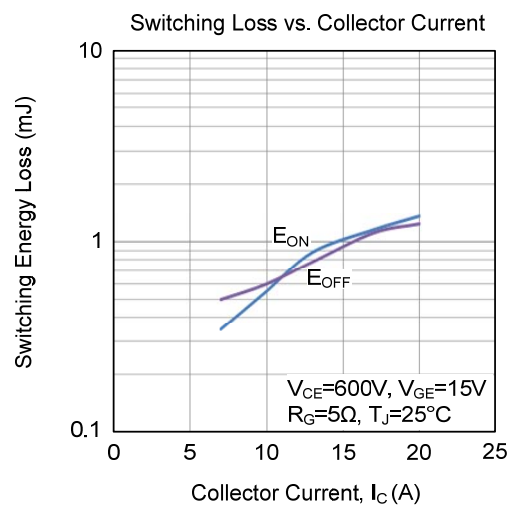
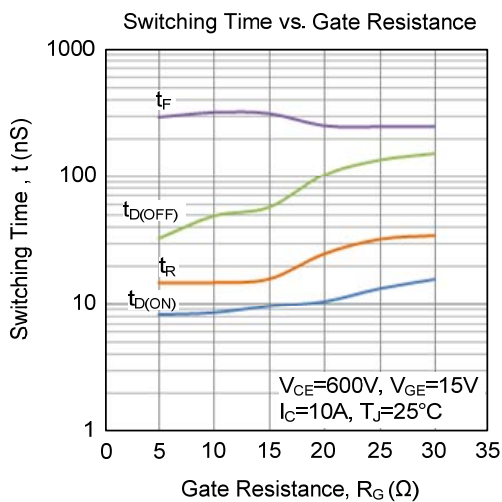
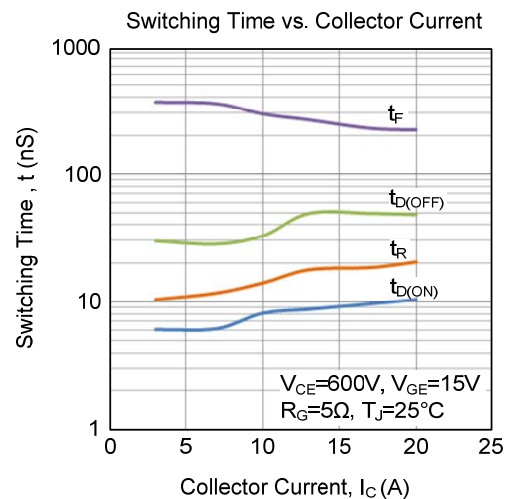
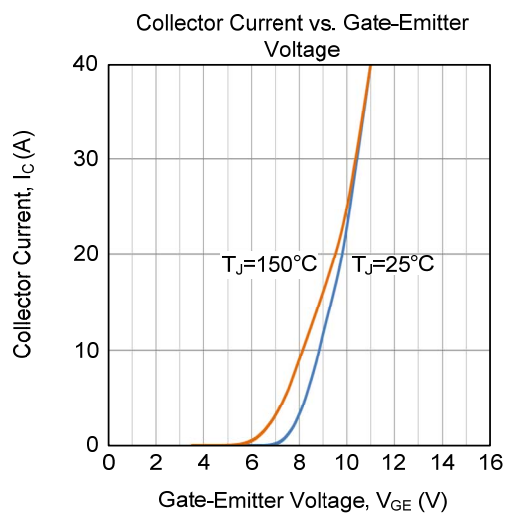
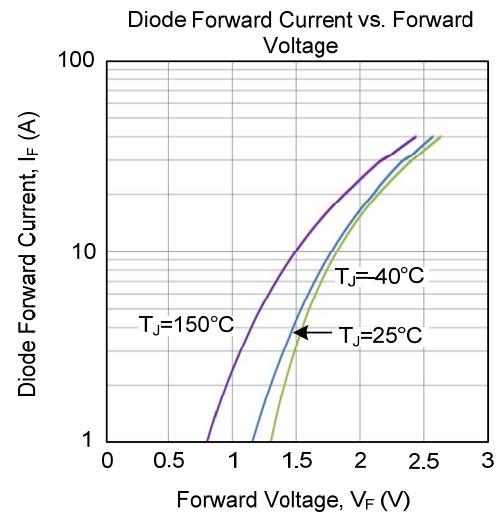
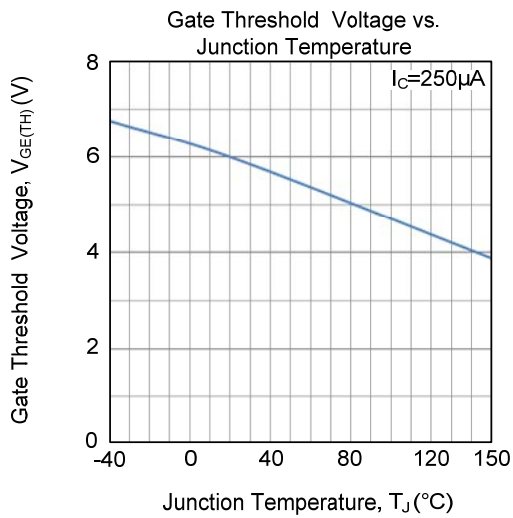


Fig 2. SWITCHING TEST WAVEFORMS

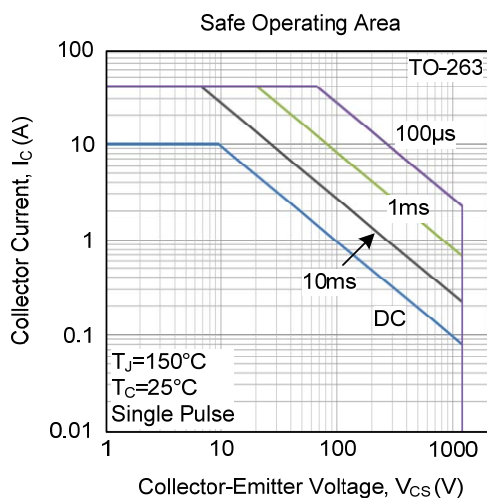
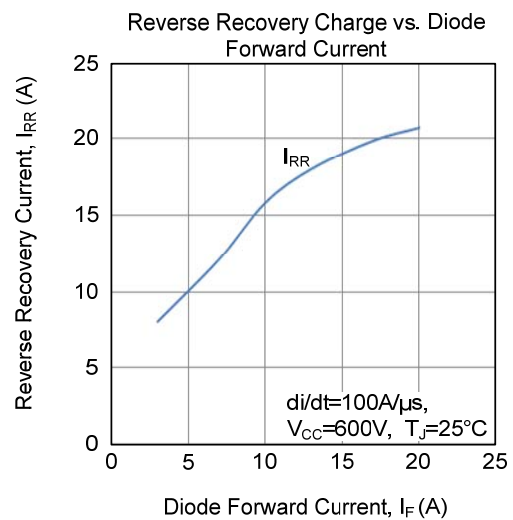
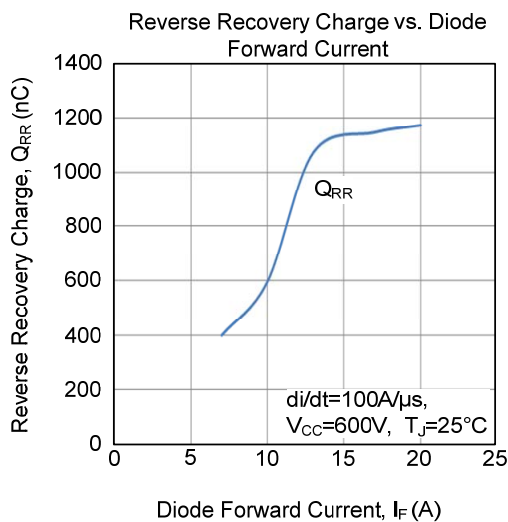
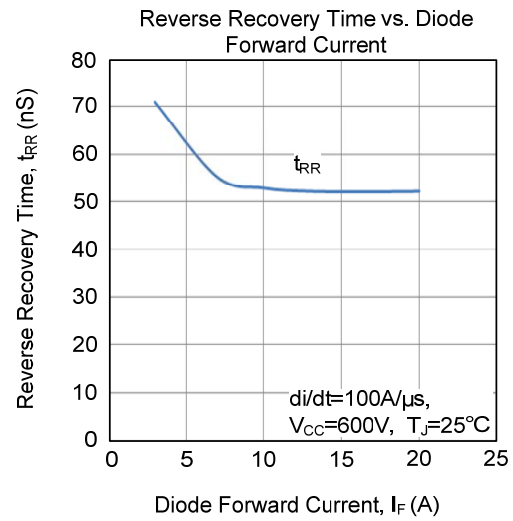
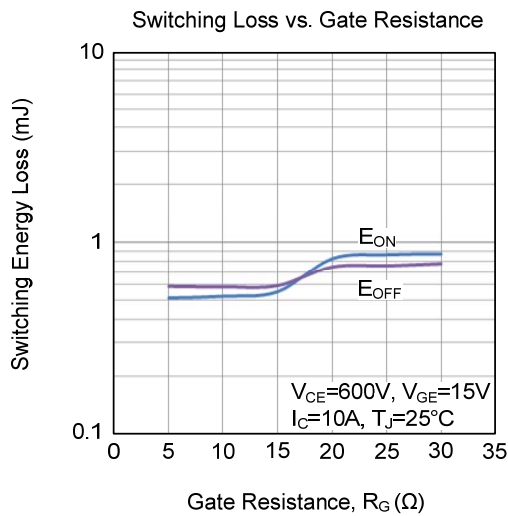
TYPICAL CHARACTERISTICS



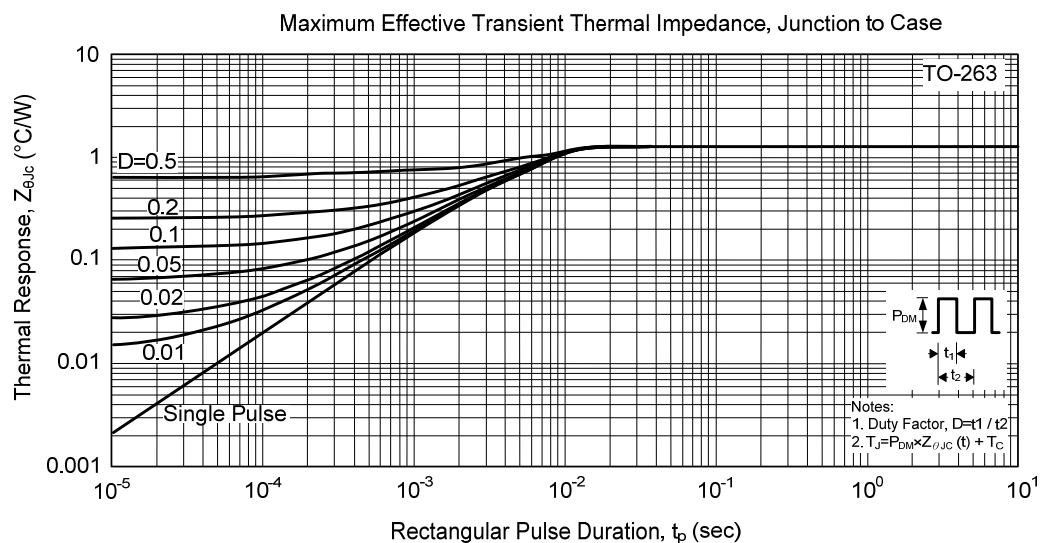
■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS



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