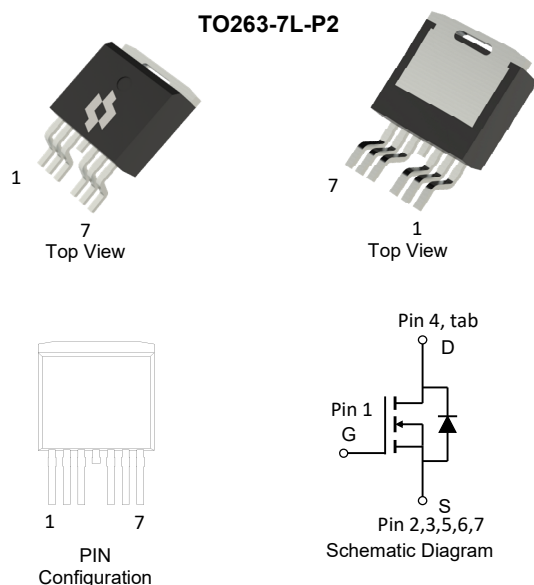


Product Summary

V_{DS}	$R_{DS(ON_TYP)}$	I_{D_MAX}
100 V	1.7 m Ω @ $V_{GS} = 10V$	285 A


Features

- Low On-Resistance
- Excellent FoM (figure of merit)
- 100% ΔV_{DS} & UIS & Rg Tested


Applications

- High Performance Power Supplies
- Motor Drives
- Hard Switching and High Speed Circuit

Mechanical Data

- Green Molding Compound
- Moisture Sensitivity: Level 1 per J-STD-020
- UL Flammability Classification Rating 94V-0

Ordering Information

Orderable Part Number	Package Type	Device Marking	Form	Quantity (pcs)
SMT10T02CHT7P	TO263-7L-P2	10T02CH	13" Tape&Reel	800

Maximum Ratings (@ $T_C = 25^\circ\text{C}$, unless otherwise specified.)

Parameter	Symbol	Value	Unit
Drain - Source Voltage	V_{DS}	100	V
Gate - Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($V_{GS} = 10V$) ⁽¹⁾	I_D	285	A
		180	A
Pulsed Drain Current ⁽²⁾	I_{DM}	1140	A
Single Pulse Avalanche Energy ⁽³⁾	E_{AS}	1440	mJ
Single Pulse Avalanche Current ($L = 0.1mH$)	I_{AS}	77	A
Power Dissipation	P_D	313	W
		125	W
Junction & Storage Temperature Range	T_J, T_{STG}	-55 ~ +150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient ⁽⁴⁾	$R_{\theta JA}$	28	33	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case ⁽⁵⁾	$R_{\theta JC}$	0.40	0.52	$^\circ\text{C/W}$

Electrical Characteristics (@ $T_J = 25^\circ\text{C}$, unless otherwise specified.)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics ⁽⁶⁾						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	100	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 100V, V _{GS} = 0V	-	-	1.0	μA
		T _J = 125°C	-	-	100	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V	-	-	±100	nA
On Characteristics ⁽⁶⁾						
Gate Threshold Voltage	V _{GS(th)}	V _{GS} = V _{DS} , I _D = 250μA	2.0	3.0	4.0	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D = 20A	-	1.7	2.1	mΩ
Forward Transconductance	g _{fs}	V _{DS} = 5.0V, I _D = 20A	-	60	-	S
Diodes Forward Voltage	V _{SD}	I _S = 2.0A, V _{GS} = 0V	-	0.7	1.2	V
Dynamic Characteristics ⁽⁷⁾						
Input Capacitance	C _{iss}	V _{DS} = 50V, V _{GS} = 0V, f = 1MHz	-	8129	-	pF
Output Capacitance	C _{oss}		-	1860	-	pF
Reverse Transfer Capacitance	C _{rss}		-	59	-	pF
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz	-	1.5	-	Ω
Switching Characteristics ⁽⁷⁾						
Turn-On DelayTime	t _{d(on)}	V _{GS} = 10V, V _{DS} = 50V I _D = 20A, R _{GEN} = 3.0Ω	-	18	-	ns
Rise Time	t _r		-	31	-	ns
Turn-Off DelayTime	t _{d(off)}		-	66	-	ns
Fall Time	t _f		-	38	-	ns
Gate Charge Characteristics ⁽⁷⁾						
Total Gate Charge (V _{GS} = 10V)	Q _g	V _{DS} = 50V, I _D = 20A V _{GS} = 10V	-	109	-	nC
Total Gate Charge (V _{GS} = 6.0V)	Q _g		-	70	-	nC
Gate-Source Charge	Q _{gs}		-	30	-	nC
Gate-Drain Charge	Q _{gd}		-	23	-	nC
Gate Plateau Voltage	V _{plateau}		-	4.2	-	V
Drain-Source Diode Characteristics ⁽⁷⁾						
Body Diode Reverse Recovery Time	t _{rr}	I _F = 20A, dI/dt = 100A/μs,	-	83	-	ns
Body Diode Reverse Recovery Charge	Q _{rr}	T _J = 25°C	-	153	-	nC
Diode Forward Current	I _S	T _C = 25°C	-	-	285	A

Notes:

1. This current is chip limited, which is calculated based on R_{thjc} .
2. This current is calculated on single pulse with 10us Single Pulse.
3. Defined by design, not subject to production test, E_{AS} condition: $T_J = 25^\circ\text{C}$, $V_{DS} = 50V$, $V_{GS} = 10V$, $L = 1.0\text{mH}$.
4. Device mounted on FR-4 substrate PC board with 2oz copper in 1inch square cooling area.
5. Thermal resistance from junction to the exposed pad.
6. Short duration pulse test used to minimize self-heating effect.
7. Defined by design, not subject to production.

Typical Electrical and Thermal Characteristics

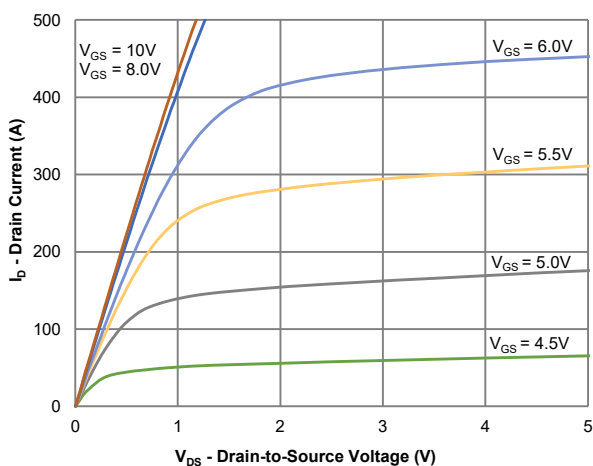


Figure 1: Output Characteristics

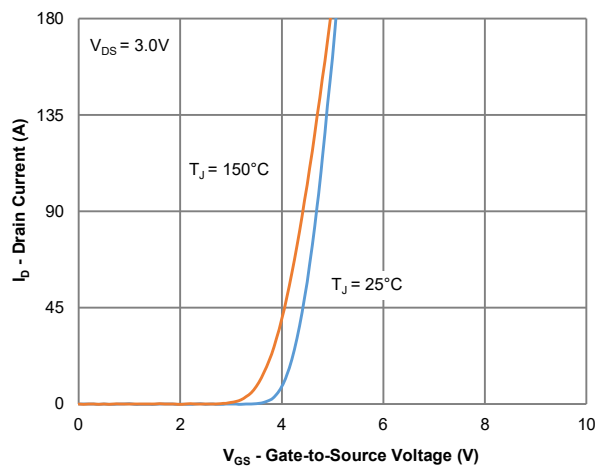


Figure 2: Transfer Characteristics

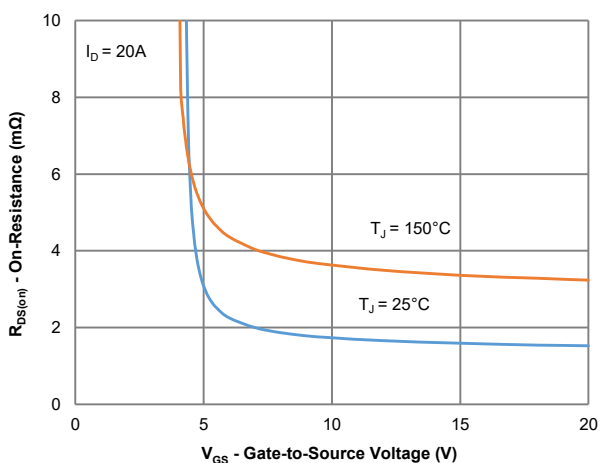


Figure 3: On-Resistance vs. Gate-Source Voltage

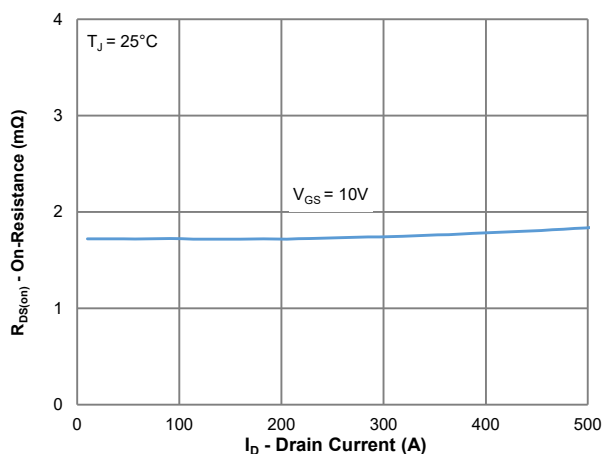


Figure 4: On-Resistance vs. Drain Current and Gate Voltage

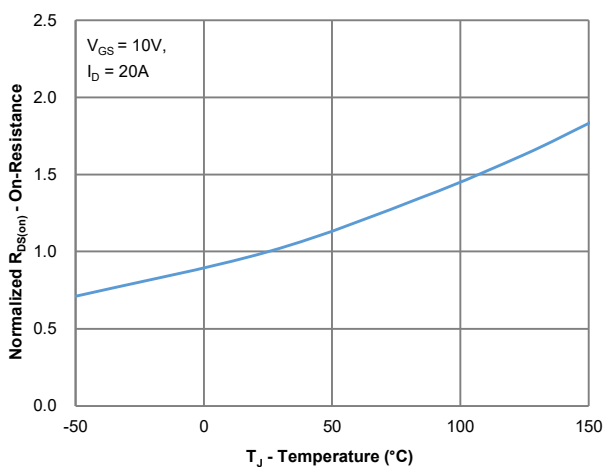


Figure 5: On-Resistance vs. Junction Temperature

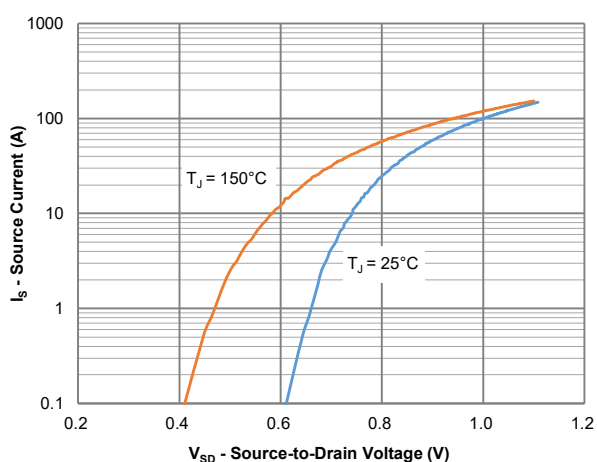


Figure 6: Source-Drain Diode Forward Voltage

Typical Electrical and Thermal Characteristics

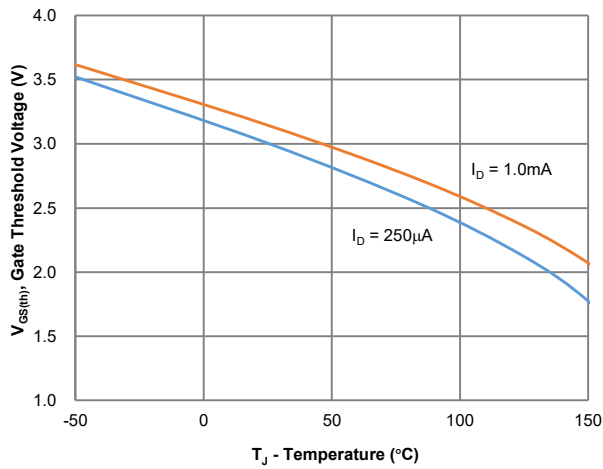


Figure 7: Gate Threshold Variation vs. Junction Temperature

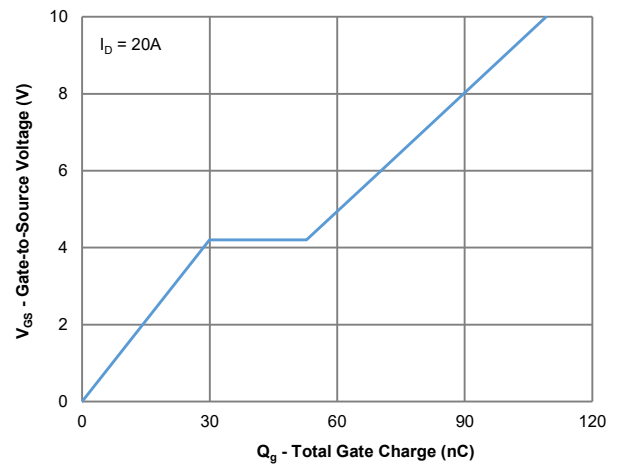


Figure 8: Gate Charge Characteristics

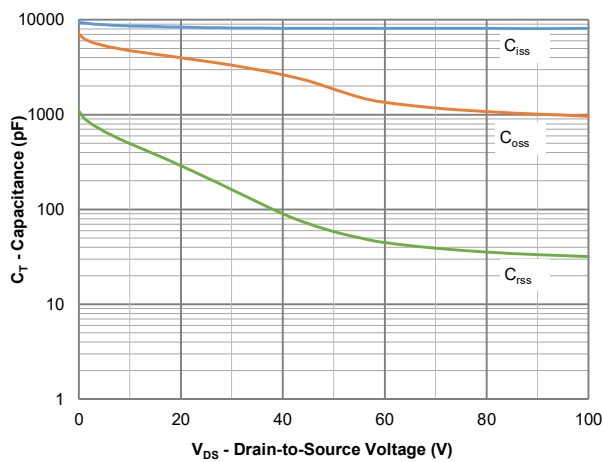


Figure 9: Capacitance Characteristics

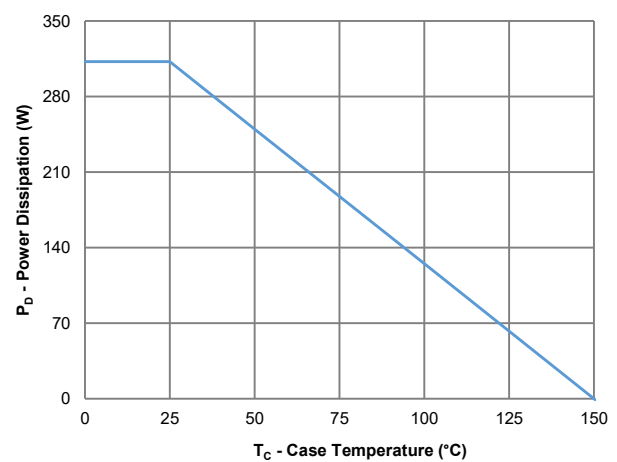


Figure 10: Power Derating

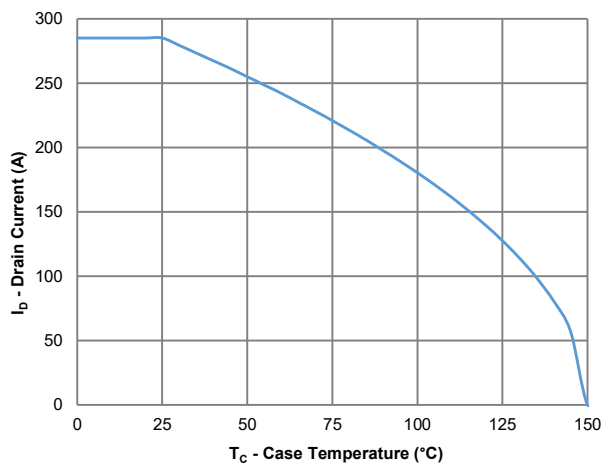


Figure 11: Current Derating

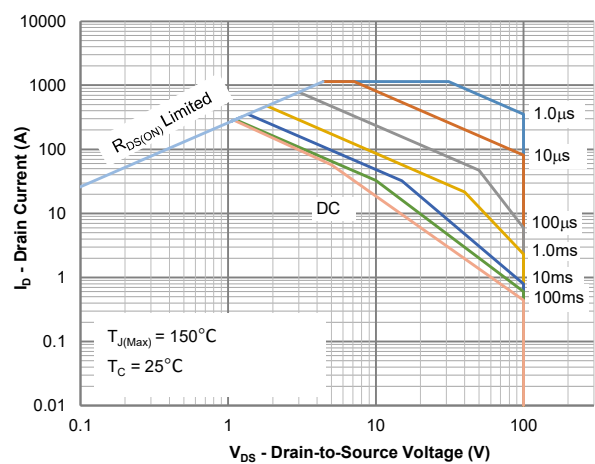
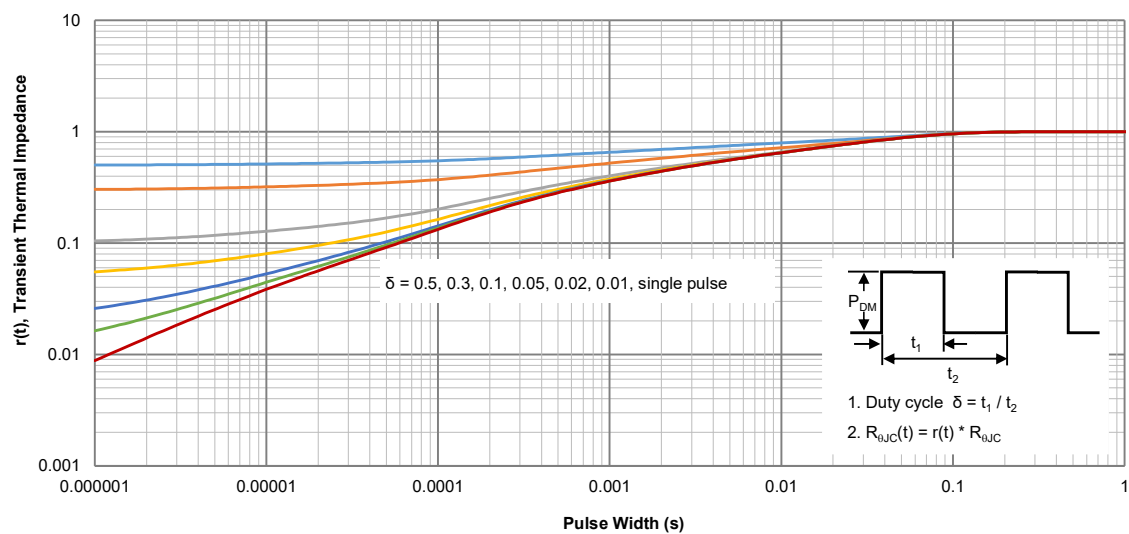
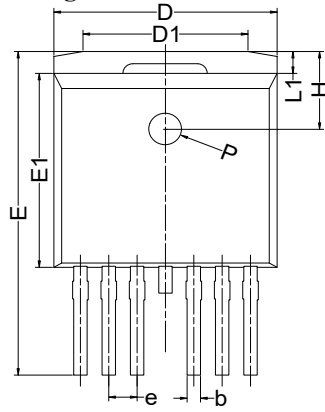
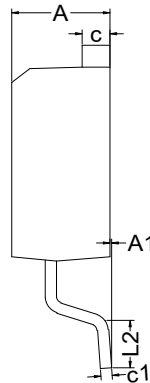
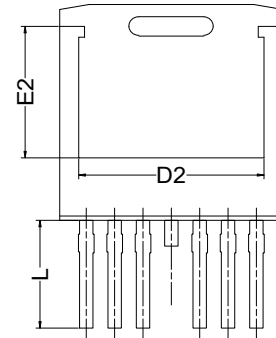
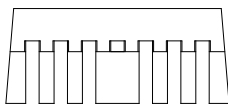


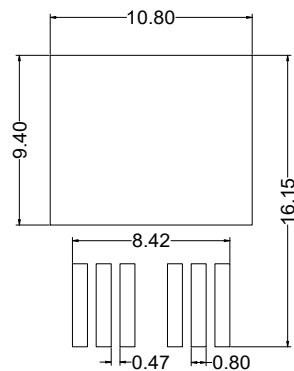
Figure 12: Safe Operating Area

Typical Electrical and Thermal Characteristics

Figure 13: Normalized Maximum Transient Thermal Impedance

TO263-7L-P2 Package Outline
Package Outline

Top View

Side View

Bottom View

Front View
NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.
2. ALL DIMNESIONS IN MILLIMETER (ANNGLE IN DEGREE).
3. DIMENSIONS D AND E1 DO NOT INCLUDE MOLD FLASH.

DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	4.200	4.430	4.600
A1	--	0.075	0.150
b	0.510	0.610	0.720
c	1.200	1.300	1.400
c1	0.400	0.510	0.620
D	9.800	--	10.380
D1	7.000	7.500	8.000
D2	8.000	--	8.600
E	15.000	--	15.800
E1	8.800	9.080	9.300
E2	6.250	6.450	6.750
H	3.300	3.600	3.900
L	5.000	5.220	5.400
L1	1.000	1.200	1.400
L2	2.300	2.500	2.700
P	1.500 REF		
e	1.270 BSC		

Recommended Soldering Footprint :


DIMENSIONS:MILLIMETERS