

Product Summary

V_{DS}	$R_{DS(ON_TYP)}$	I_{D_MAX}
100 V	1.5 mΩ @ $V_{GS} = 10V$	297 A

Features

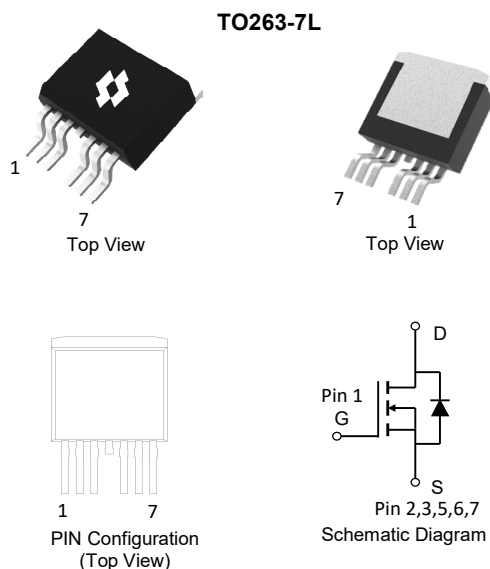
- Low On-Resistance
- Excellent FoM (figure of merit)
- 100% ΔV_{DS} & UIS & Rg Tested


**HALOGEN
FREE**
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)
SMT10T01EHT7	TO263-7L	10T01EH	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	297	A
		188	A
Pulsed Drain Current ⁽²⁾	I_{DM}	1138	A
Single Pulse Avalanche Energy ⁽³⁾	E_{AS}	2016	mJ
Single Pulse Avalanche Current ($L = 0.1\text{mH}$)	I_{AS}	115	A
Power Dissipation	P_D	278	W
		111	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⁾	$R_{\theta JA}$	25	31	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case ⁽⁵⁾	$R_{\theta JC}$	0.35	0.45	$^\circ\text{C/W}$

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	-	1.5	1.8	mΩ
Forward Transconductance	g _{fs}	V _{DS} = 5.0V, I _D = 20A	-	61	-	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	-	11930	-	pF
Output Capacitance	C _{oss}		-	2720	-	pF
Reverse Transfer Capacitance	C _{rss}		-	71	-	pF
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz	-	1.6	-	Ω
Switching Characteristics ⁽⁷⁾						
Turn-On DelayTime	t _{d(on)}	V _{GS} = 10V, V _{DS} = 50V I _D = 20A, R _{GEN} = 3.0Ω	-	26	-	ns
Rise Time	t _r		-	35	-	ns
Turn-Off DelayTime	t _{d(off)}		-	94	-	ns
Fall Time	t _f		-	49	-	ns
Gate Charge Characteristics ⁽⁷⁾						
Total Gate Charge (V _{GS} = 10V)	Q _g	V _{DS} = 50V, I _D = 20A V _{GS} = 10V	-	154	-	nC
Total Gate Charge (V _{GS} = 6.0V)	Q _g		-	98	-	nC
Gate-Source Charge	Q _{gs}		-	46	-	nC
Gate-Drain Charge	Q _{gd}		-	29	-	nC
Gate Plateau Voltage	V _{plateau}		-	4.3	-	V
Drain-Source Diode Characteristics ⁽⁷⁾						
Body Diode Reverse Recovery Time	t _{rr}	I _F = 20A, dI/dt = 100A/μs, T _J = 25°C	-	107	-	ns
Body Diode Reverse Recovery Charge	Q _{rr}		-	229	-	nC
Diode Forward Current	I _S	T _C = 25°C	-	-	204	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: $T_J = 25^\circ\text{C}, V_{DD} = 50V, V_{GS} = 10V, L = 1.0mH$.
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

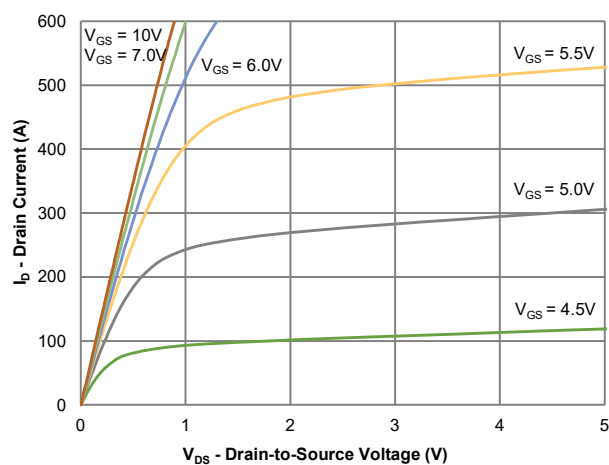


Figure 1: Output Characteristics

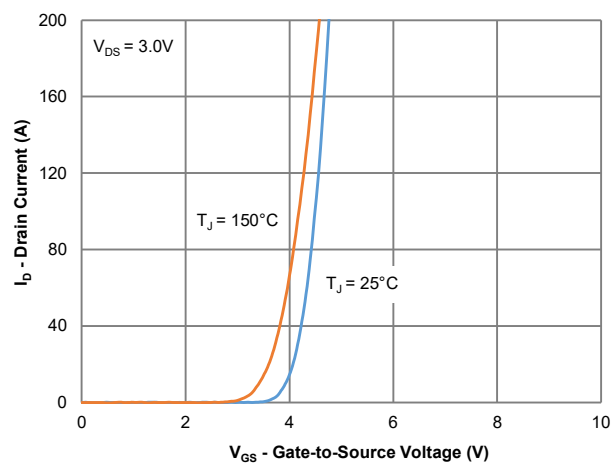


Figure 2: Transfer Characteristics

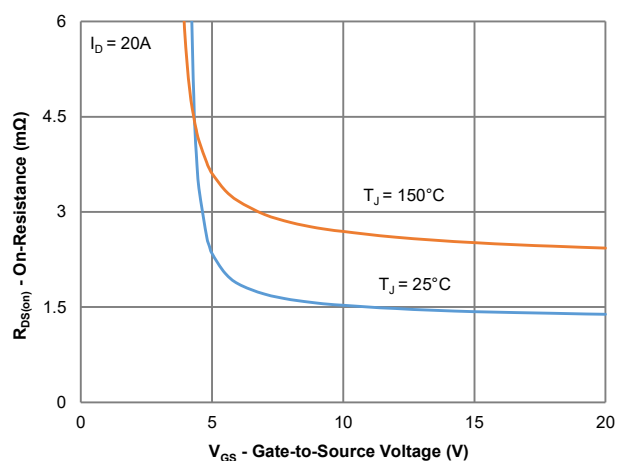


Figure 3: On-Resistance vs. Gate-Source Voltage

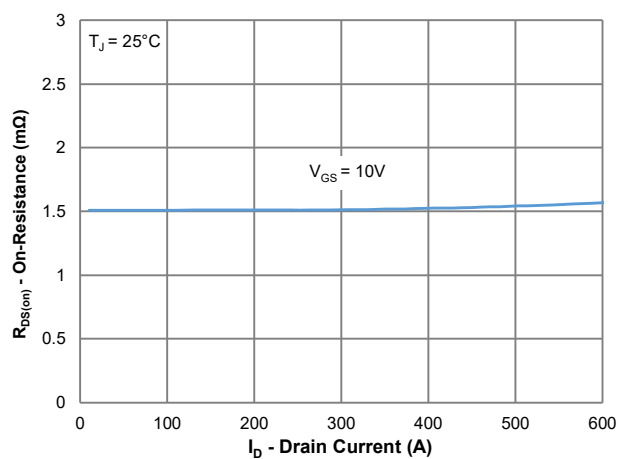


Figure 4: On-Resistance vs. Drain Current and Gate Voltage

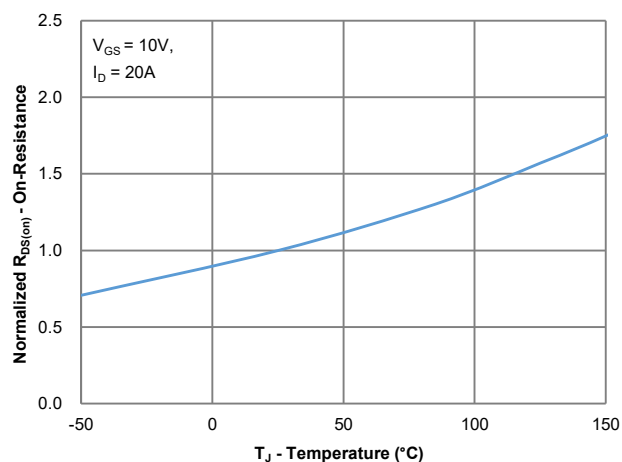


Figure 5: On-Resistance vs. Junction Temperature

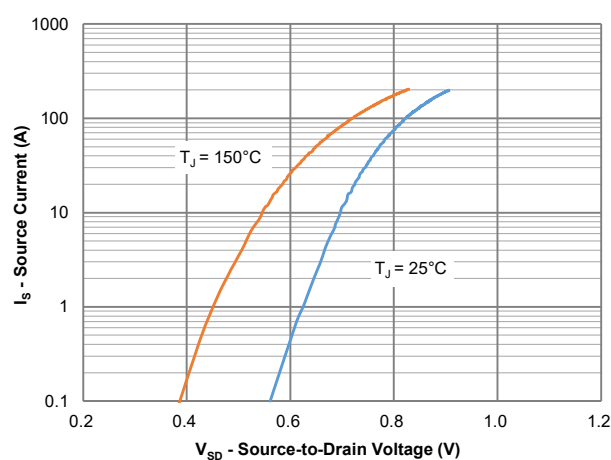


Figure 6: Source-Drain Diode Forward Voltage

Typical Electrical and Thermal Characteristics

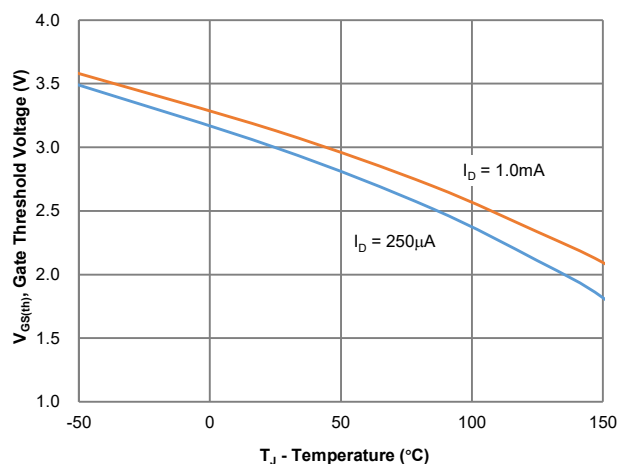


Figure 7: Gate Threshold Variation vs. Junction Temperature

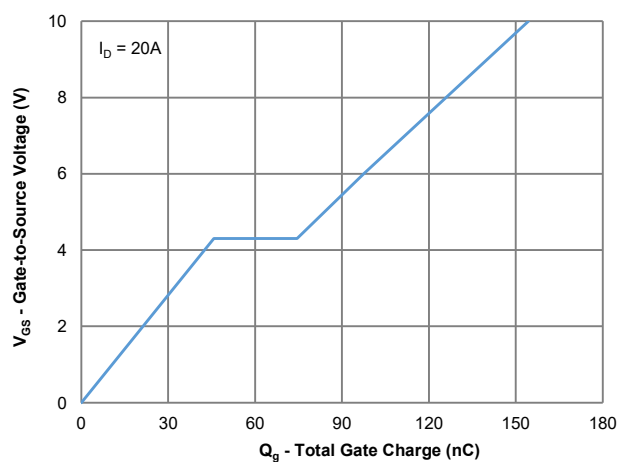


Figure 8: Gate Charge Characteristics

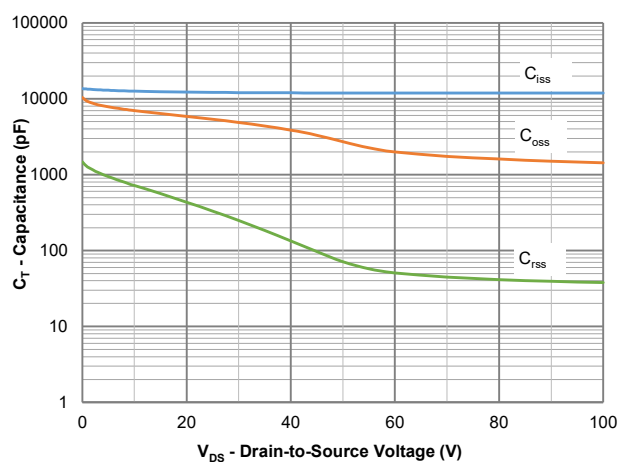


Figure 9: Capacitance Characteristics

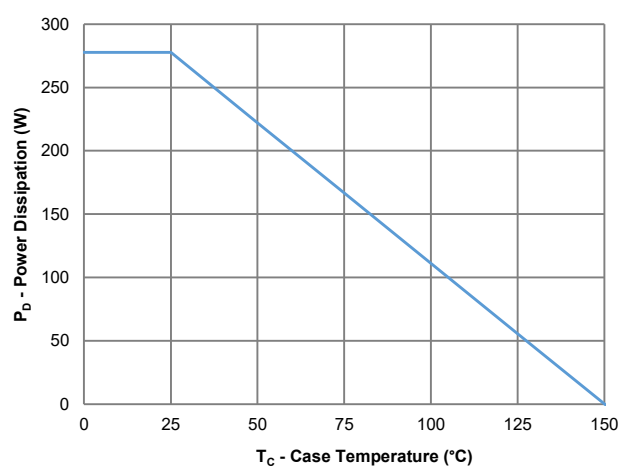


Figure 10: Power Derating

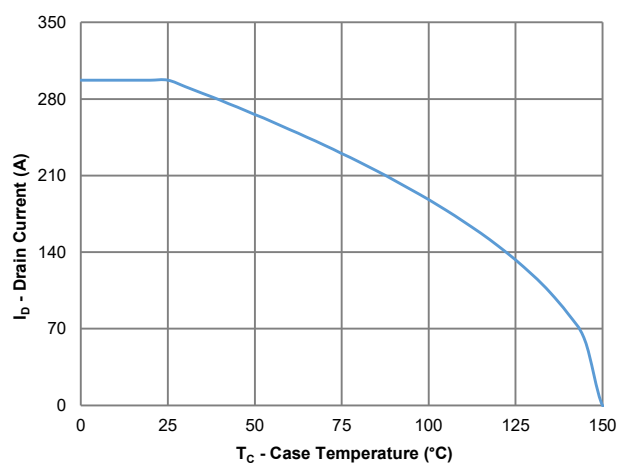


Figure 11: Current Derating

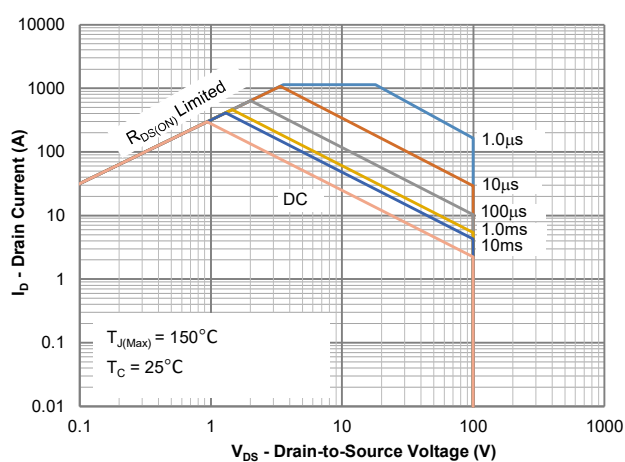
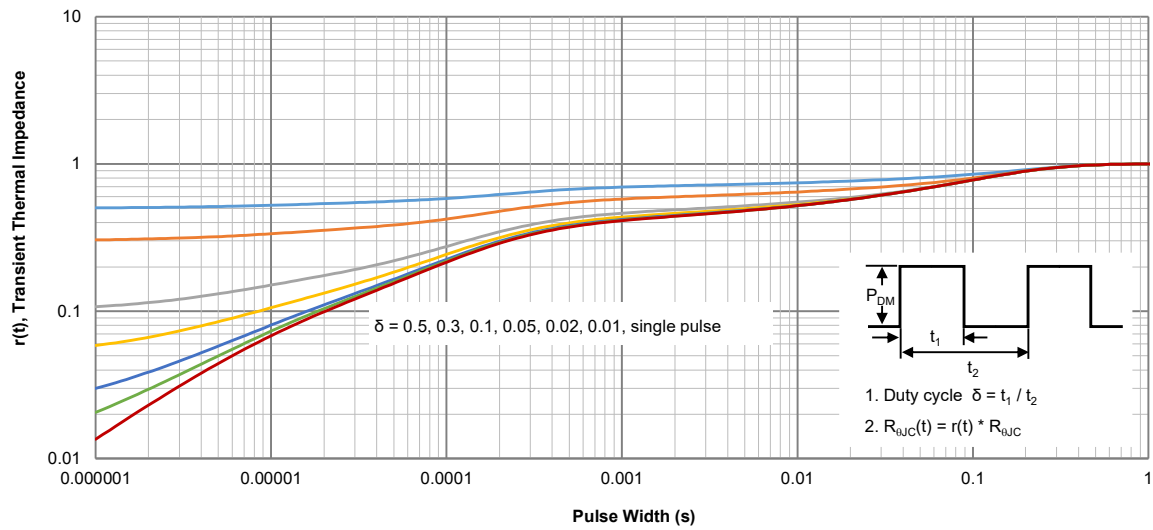
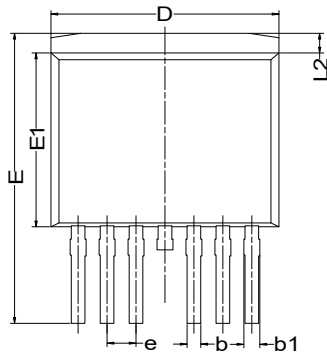
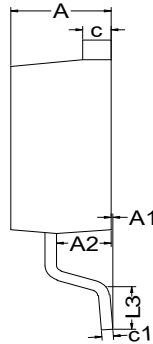
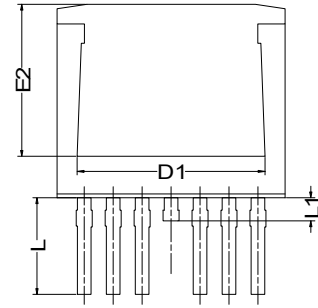
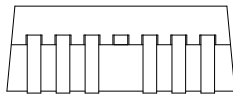


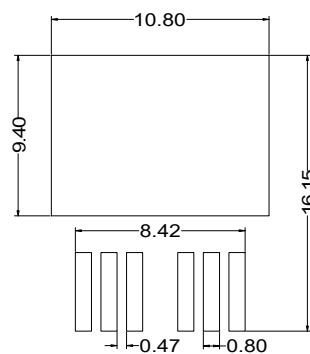
Figure 12: Safe Operating Area

Typical Electrical and Thermal Characteristics

Figure 13: Normalized Maximum Transient Thermal Impedance

TO263-7L Package Outline
Package Outline

Top View

Side View

Bottom View

Front View
NOTES:

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

DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	4.20	4.50	4.64
A1	0.01	--	0.25
A2	2.30	--	2.70
b	0.50	--	0.80
b1	0.60	--	0.90
c	1.14	--	1.40
c1	0.40	0.50	0.60
D	9.80	10.00	10.36
D1	8.30	--	8.80
E	14.61	15.00	15.88
E1	8.82	--	9.45
E2	6.86	7.65	--
L	4.80	5.00	5.20
L1	1.20 REF		
L2	1.05 REF		
L3	1.78	--	2.79
e	1.27 BSC		

Recommended Soldering Footprint :


DIMENSIONS:MILLIMETERS