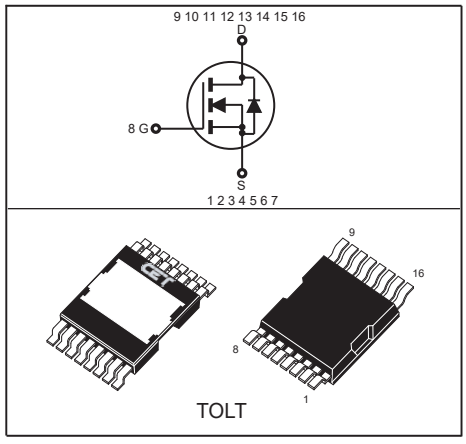
CELT350N12

N-Channel Enhancement Mode Field Effect Transistor

V_{DSS}	$R_{DS(ON)\ typ}$	I_D	@V_{GS}
120V	1.3mΩ	355A	10V



FEATURES

- High power and current handing capability.
- Reliable and rugged.
- Excellent figure of merit.
- Pb-free lead plating ; RoHS compliant.
- Halogen Free.
- 100% Avalanche tested .

APPLICATIONS

- Battery Management System.
- Motor Driver.
- Load Switch.

ABSOLUTE MAXIMUM RATINGS T_C = 25°C unless otherwise noted

Parameter	Symbol	Limit	Units
Drain-Source Voltage	V_{DS}	120	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous@ T_C = 25°C	I_D	355	A
@ T_C = 70°C		297	A
Drain Current-Pulsed [a]	I_{DM}	1420	A
Maximum Power Dissipation @ T_C = 25°C	P_D	429	W
- Derate above 25°C		2.86	W/°C
Single Pulsed Avalanche Energy [d]	E_{AS}	1568	mJ
Single Pulsed Avalanche Current [d]	I_{AS}	56	A
Operating and Store Temperature Range	T_J,T_{stg}	-55 to 175	°C

Thermal Characteristics

Parameter	Symbol	Limit	Units
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.35	°C/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	60	°C/W

Electrical Characteristics T_C = 25°C unless otherwise noted

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = 250μA	120			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 120V, V_{GS} = 0V			1	μA
Gate Body Leakage Current, Forward	I_{GSSF}	V_{GS} = 20V, V_{DS} = 0V			100	nA
Gate Body Leakage Current, Reverse	I_{GSSR}	V_{GS} = -20V, V_{DS} = 0V			-100	nA
On Characteristics [b]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS} = V_{DS}, I_D = 250μA	2		4	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 30A		1.3	1.7	mΩ
Gate Input Resistance	R_g	f=1MHz,open Drain		1.8		Ω
Dynamic Characteristics [c]						
Input Capacitance	C_{iss}	V_{DS} = 60V, V_{GS} = 0V, f = 1.0 MHz		11325		pF
Output Capacitance	C_{oss}			3490		pF
Reverse Transfer Capacitance	C_{rss}			85		pF
Switching Characteristics [c]						
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 60V, I_D = 20A, V_{GS} =10V, R_{GEN} = 3Ω		54		ns
Turn-On Rise Time	t_r			18		ns
Turn-Off Delay Time	$t_{d(off)}$			103		ns
Turn-Off Fall Time	t_f			30		ns
Total Gate Charge	Q_g	V_{DS} = 60V, I_D = 20A, V_{GS} = 10V		127		nC
Gate-Source Charge	Q_{gs}			32		nC
Gate-Drain Charge	Q_{gd}			34		nC
Drain-Source Diode Characteristics and Maximun Ratings						
Drain-Source Diode Forward Current	I_S				355	A
Drain-Source Diode Forward Voltage [b]	V_{SD}	V_{GS} = 0V, I_S = 10A			1.2	V

Notes :
a.Repetitive Rating : Pulse width limited by maximum junction temperature
b.Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
c.Guaranteed by design, not subject to production testing.
d.L = 1mH, I_{AS} =56A, V_{DD} = 60V, R_G = 25Ω, Starting T_J = 25°C.

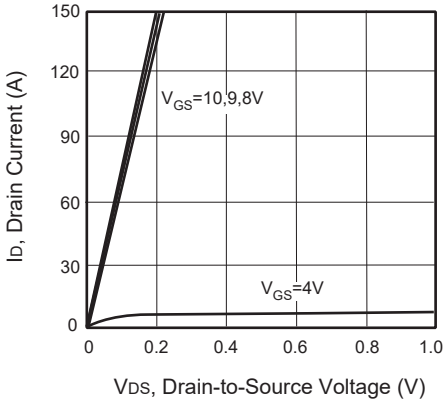


Figure 1. Output Characteristics

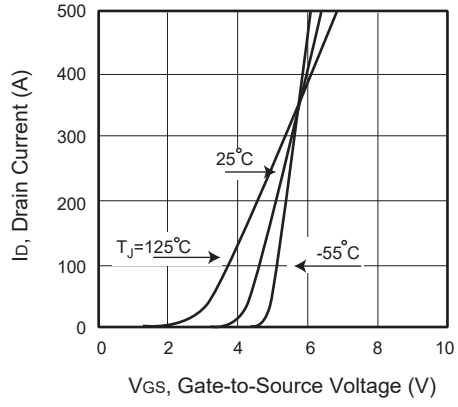


Figure 2. Transfer Characteristics

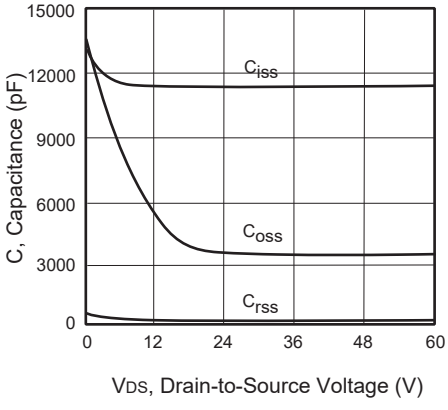


Figure 3. Capacitance

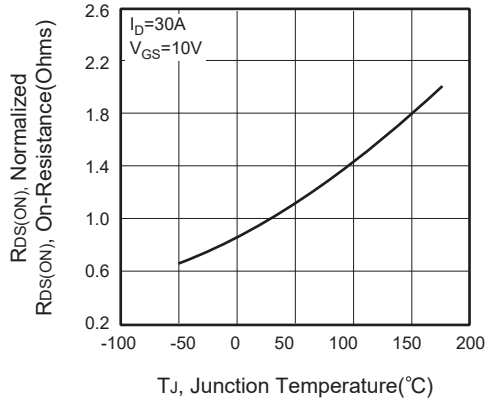


Figure 4. On-Resistance Variation with Temperature

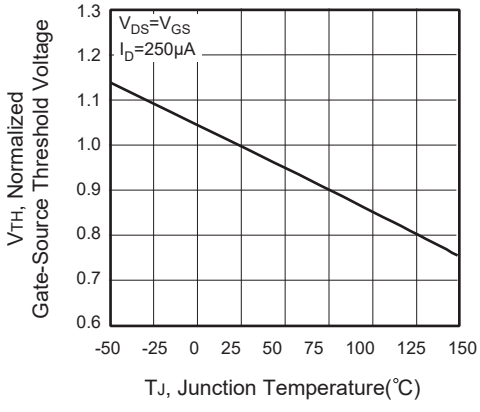


Figure 5. Gate Threshold Variation with Temperature

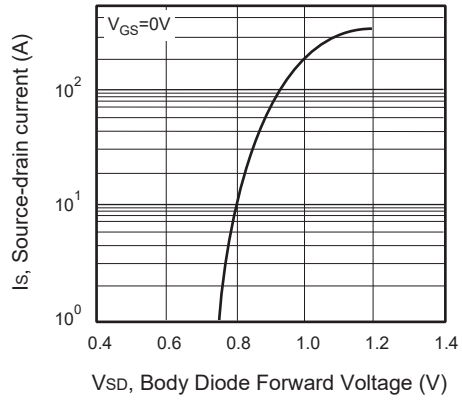


Figure 6. Body Diode Forward Voltage Variation with Source Current

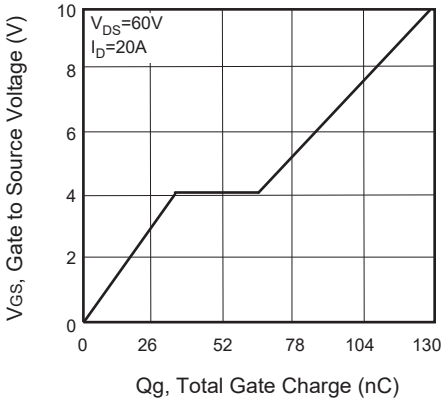


Figure 7. Gate Charge

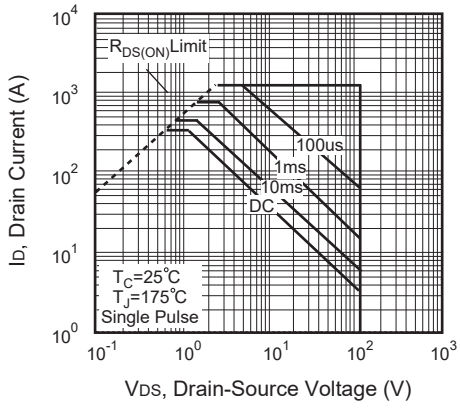


Figure 8. Maximum Safe Operating Area

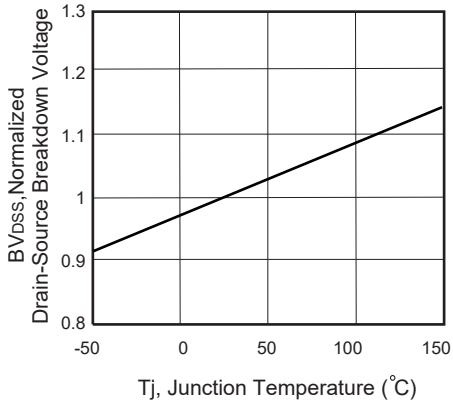


Figure 9. Breakdown Voltage Variation VS Temperature

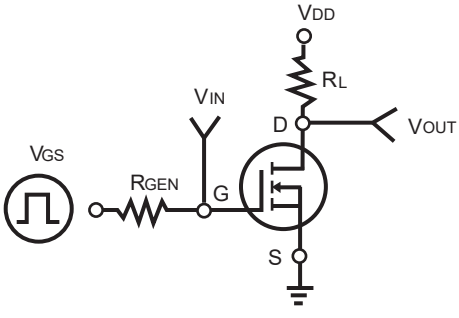


Figure 10. Switching Test Circuit

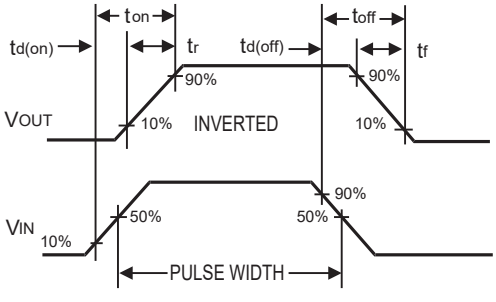


Figure 11. Switching Waveforms

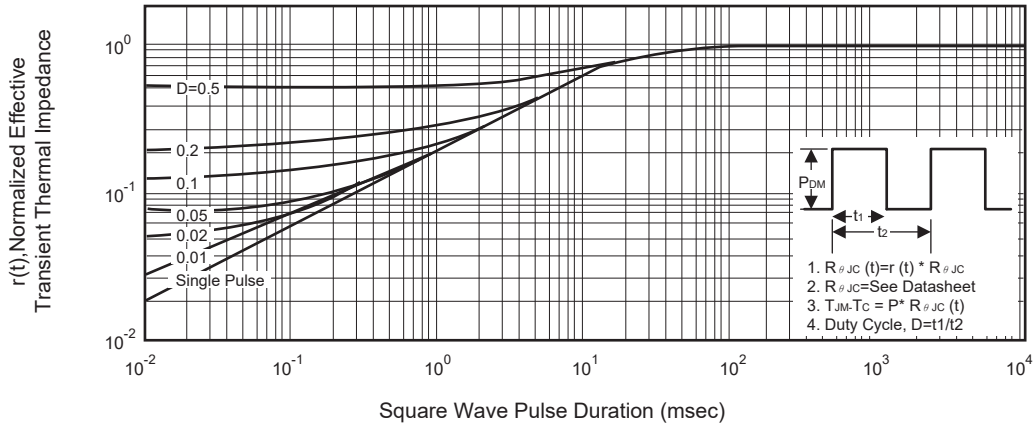
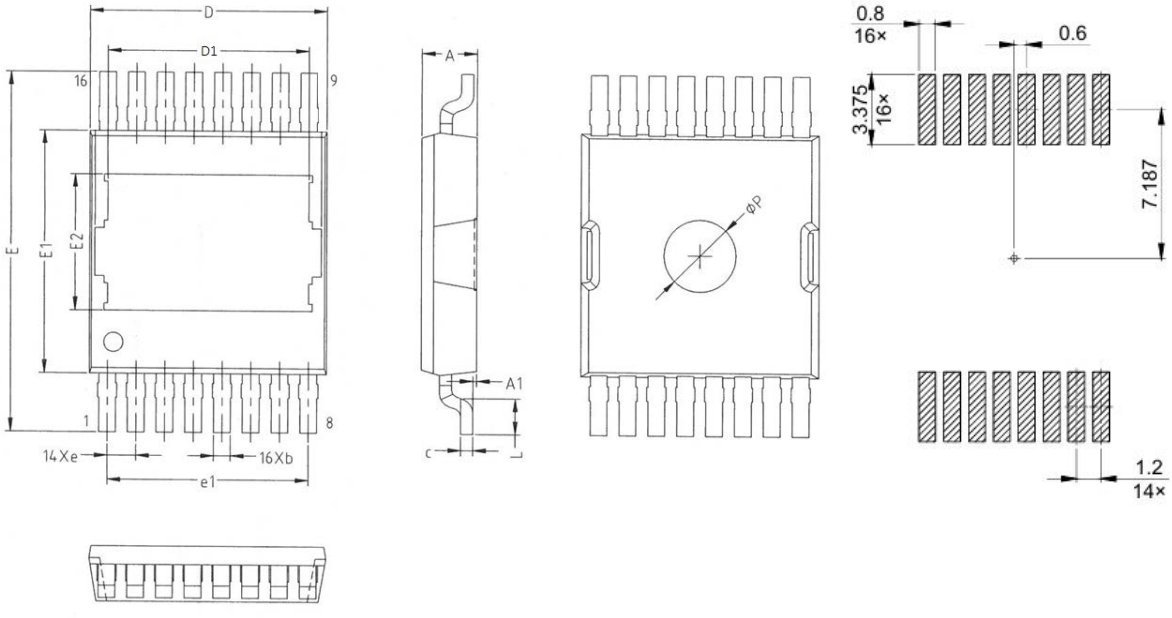


Figure 12. Normalized Thermal Transient Impedance Curve

TOLT 產品外觀尺寸圖 (Product Outline Dimension)



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.250	2.350	0.089	0.093
A1	0.010	0.160	0.000	0.006
b	0.600	0.800	0.024	0.031
c	0.400	0.600	0.016	0.024
D	9.700	10.100	0.382	0.398
D1	8.300	8.500	0.327	0.335
E	14.800	15.200	0.583	0.598
E1	10.000	10.300	0.394	0.406
E2	5.570	5.770	0.219	0.227
e	1.20BSC		0.047BSC	
e1	8.40BSC		0.331BSC	
L	1.400	1.600	0.055	0.063
P	2.900	3.100	0.114	0.122