

Features

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- 100% EAS Guaranteed
- Green Device Available

Applications

- High Frequency Point-of-Load, Synchronous Buck Converter
- Networking DC-DC Power System
- Load Switch

Product Summary



V_{DS}	100	V
I_D	403	A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	1.6	m Ω



Absolute Maximum Ratings ($T_C=25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹	$I_D@T_C=25^\circ\text{C}$	403	A
Continuous Drain Current ¹	$I_D@T_C=100^\circ\text{C}$	285	A
Pulsed Drain Current ²	I_{DM}	1009	A
Single Pulse Avalanche Energy	EAS	500	mJ
Avalanche Current	I_{AS}	100	A
Total Power Dissipation	$P_D@T_C=25^\circ\text{C}$	500	W
Total Power Dissipation	$P_D@T_C=100^\circ\text{C}$	250	W
Storage Temperature Range	T_{STG}	-55 to 175	$^\circ\text{C}$
Operating Junction Temperature Range	T_J	-55 to 175	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	---	45	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	---	0.3	$^\circ\text{C}/\text{W}$

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	100	---	---	V
Static Drain-Source On-Resistance ²	$R_{DS(ON)}$	$V_{GS}=10V, I_D=30A$	---	1.3	1.6	m Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	2	3	4	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=80V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
Total Gate Charge	Q_g	$V_{DD}=50V, V_{GS}=10V, I_D=30A$	---	203	---	nC
Gate-Source Charge	Q_{gs}		---	60	---	
Gate-Drain Charge	Q_{gd}		---	53	---	
Turn-On Delay Time	$T_{d(on)}$	$V_{DD}=50V, R_G=1\Omega, I_D=1A$	---	37	---	ns
Rise Time	T_r		---	21	---	
Turn-Off Delay Time	$T_{d(off)}$		---	78	---	
Fall Time	T_f		---	107	---	
Input Capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V, f=1\text{MHz}$	---	12340	---	pF
Output Capacitance	C_{oss}		---	3992	---	
Reverse Transfer Capacitance	C_{rss}		---	37	---	

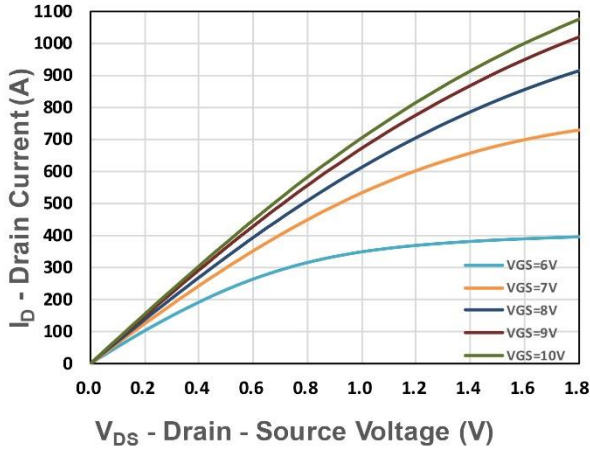
Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Diode Forward Voltage ²	V_{SD}	$V_{GS}=0V, I_S=30A, T_J=25^\circ\text{C}$	---	---	1.1	V
Reverse Recovery Time	t_{rr}	$I_F=10A, di/dt=100A/\mu s, T_J=25^\circ\text{C}$	---	119	---	nS
Reverse Recovery Charge	Q_{rr}		---	347	---	nC

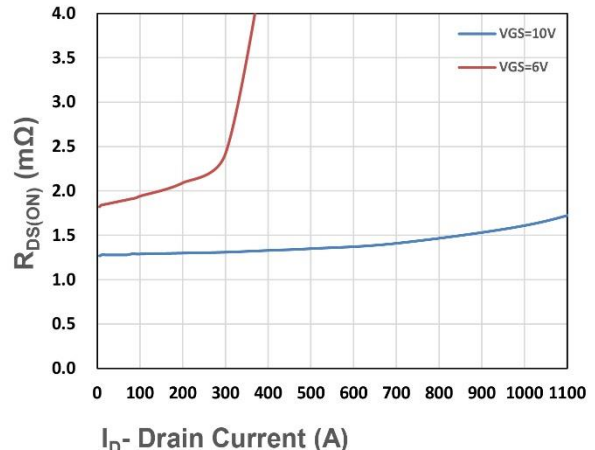
Note:

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$

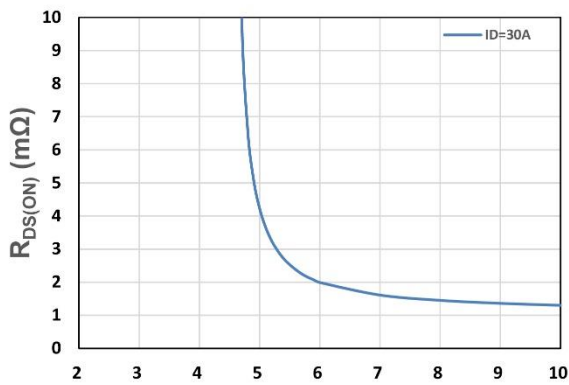
Typical Characteristics



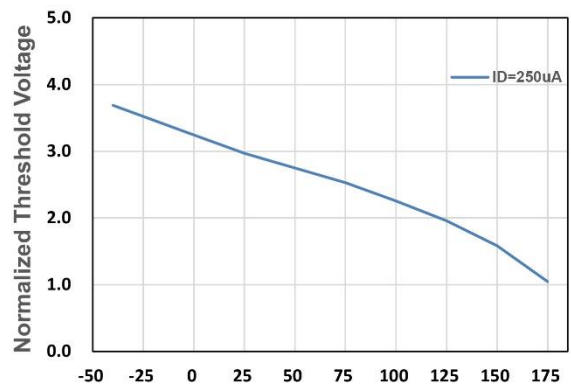
V_{DS} - Drain - Source Voltage (V)
Figure 1. Output Characteristics



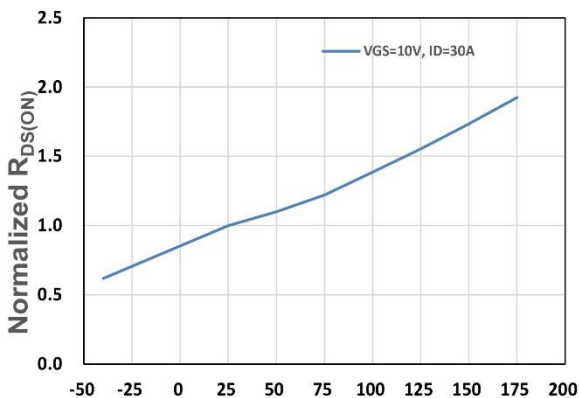
I_D - Drain Current (A)
Figure 2. On-Resistance vs. ID



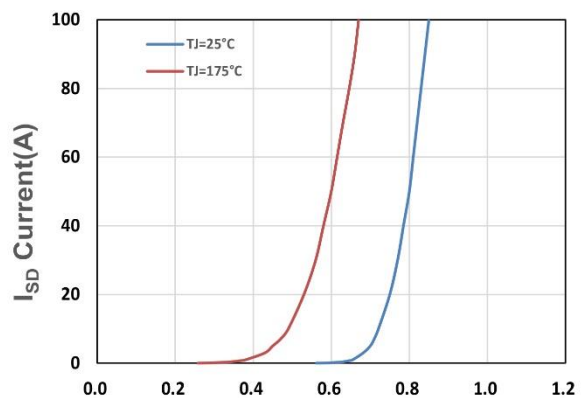
V_{GS} - Gate - Source Voltage (V)
Figure 3. On-Resistance vs. VGS



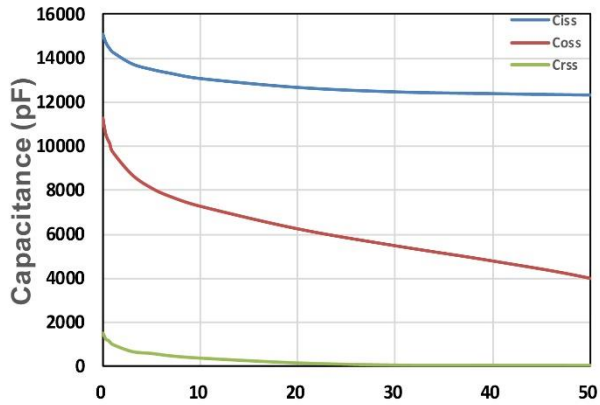
T_j , Junction Temperature(°C)
Figure 4. Gate Threshold Voltage



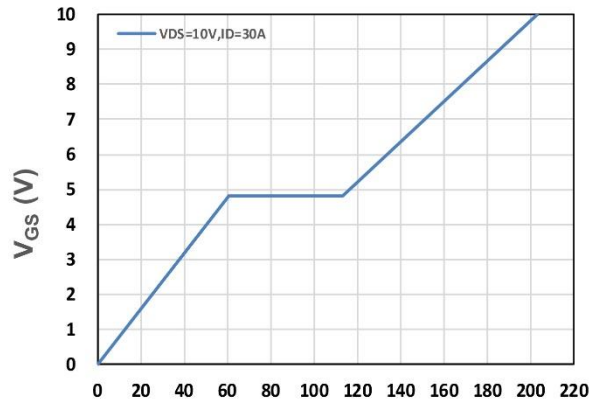
T_j , Junction Temperature(°C)
Figure 5. Drain-Source On Resistance



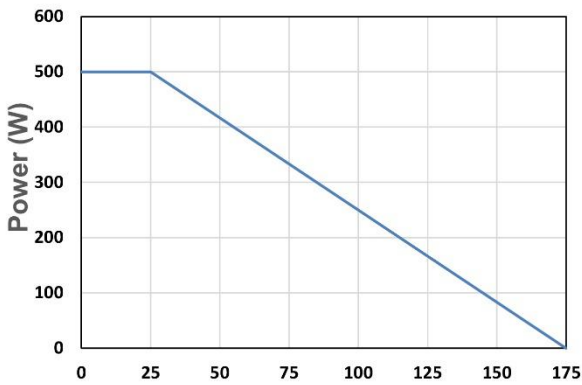
V_{SD} , Source-Drain Voltage(V)
Figure 6. Source-Drain Diode Forward



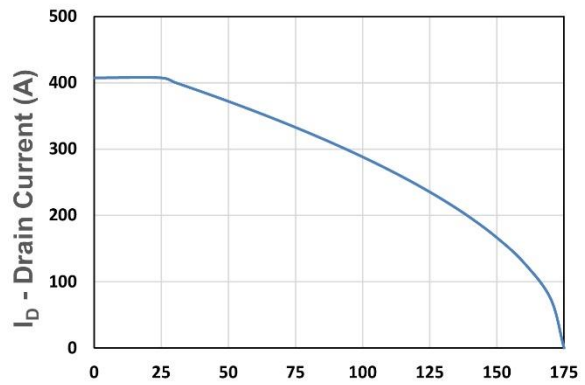
V_{DS} - Drain - Source Voltage (V)
Figure 7. Capacitance



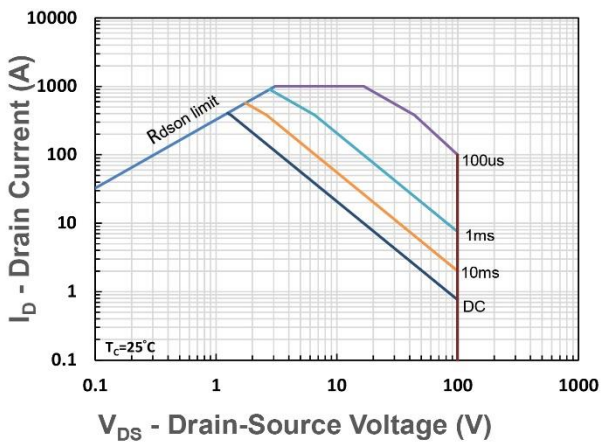
Qg, Total Gate Charge (nC)
Figure 8. Gate Charge Characteristics



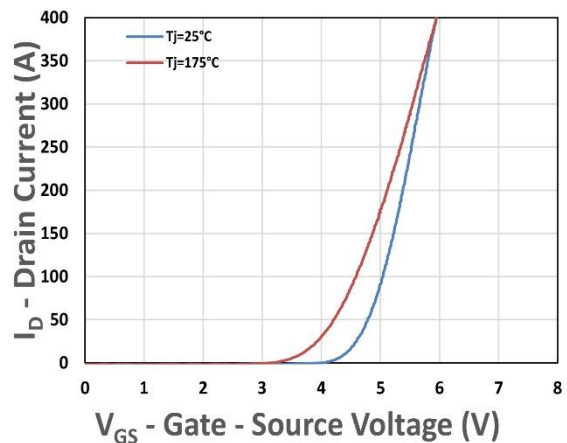
Tc - Case Temperature (°C)
Figure 9. Power Dissipation



Tc - Case Temperature (°C)
Figure 10. Drain Current

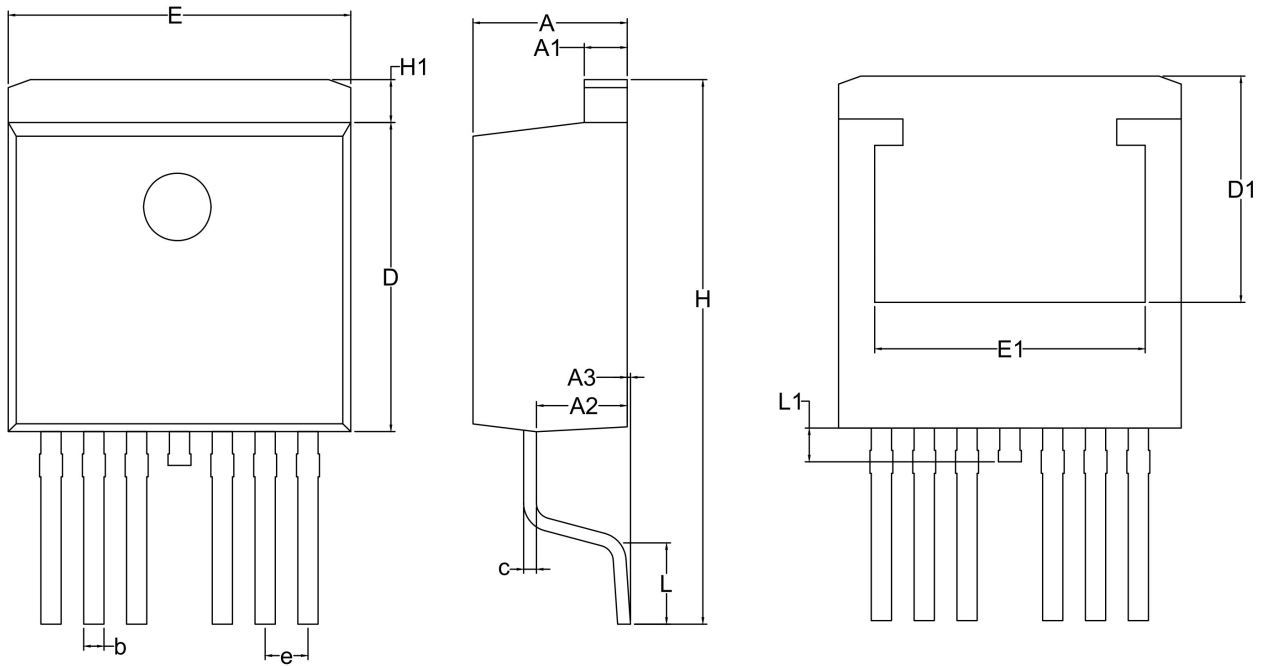


V_{DS} - Drain-Source Voltage (V)
Figure 11. Safe Operating Area



V_{GS} - Gate - Source Voltage (V)
Figure 12. Transfer Characteristics

TO263-6L Package Outline Data



Symbol	Dimensions (unit: mm)		
	Min	Typ	Max
A	4.25	4.40	4.55
A1	1.20	1.30	1.40
A2	2.25	2.40	2.55
A3	0.01	0.13	0.25
b	0.50	0.60	0.70
c	0.40	0.50	0.60
D	9.05	9.25	9.45
D1	6.90	--	--
e	1.27 BSC		
E	9.80	10.00	10.20
E1	7.25	--	--
H	14.65	15.00	15.35
H1	0.80	1.00	1.20
L	2.40	2.70	3.00
L1	0.85	1.00	1.15