

V_{DS}	=	1700 V
$R_{DS(on)}$	=	650 mΩ
$I_D@25^{\circ}C$	=	7.0 A

Features

- High Blocking Voltage with Low On-Resistance
- High Speed Switching with Low Capacitance
- Easy to Parallel and Simple to Drive
- Ultra-low Drain-gate capacitance

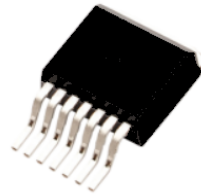
Benefits

- Higher System Efficiency
- Reduced Cooling Requirements
- Increased System Reliability
- Increased System Switching Frequency

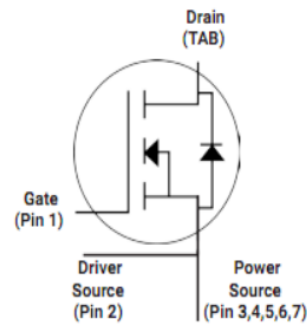
Applications

- Auxiliary Power Supplies
- Switch Mode Power Supplies
- High-voltage Capacitive

Package



TO-263-7L



Maximum Ratings ($T_c=25^{\circ}C$ unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{DSmax}	Drain-Source Voltage	1700	V	$V_{GS}=0V, I_D=100\mu A$	
V_{GSmax}	Gate-Source Voltage	-10/+25	V	Absolute maximum values	
V_{GSop}	Gate-Source Voltage	-5/+20	V	Recommended operational values	
I_D	Continuous Drain Current	7.0	A	$V_{GS}=20V, T_c=25^{\circ}C$	
		4.5		$V_{GS}=20V, T_c=100^{\circ}C$	
$I_{D(pulse)}$	Pulsed Drain Current	9.0	A	Pulse width t_p limited by T_{Jmax}	
P_D	Power Dissipation	62	W	$T_c=25^{\circ}C, T_J=150^{\circ}C$	
T_J, T_{STG}	Operating Junction and Storage Temperature	-55 to +150	$^{\circ}C$		

Electrical Characteristics ($T_c=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions	Note
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	1700	/	/	V	$V_{GS}=0V, I_D=100\mu A$	
$V_{GS(th)}$	Gate Threshold Voltage	2.0	2.6	4.0	V	$V_{DS}=V_{GS}, I_D=1.0mA$	Fig. 11
		/	1.8	/		$V_{DS}=V_{GS}, I_D=1.0mA, T_J=150^\circ\text{C}$	
I_{DSS}	Zero Gate Voltage Drain Current	/	1	100	μA	$V_{DS}=1700V, V_{GS}=0V$	
I_{GSS+}	Gate-Source Leakage Current	/	10	250	nA	$V_{DS}=0V, V_{GS}=25V$	
I_{GSS-}	Gate-Source Leakage Current	/	10	250	nA	$V_{DS}=0V, V_{GS}=-10V$	
$R_{DS(on)}$	Drain-Source On-State Resistance	/	650	850	m Ω	$V_{GS}=20V, I_D=2.0A$	
		/	1300	/		$V_{GS}=20V, I_D=2.0A, T_J=150^\circ\text{C}$	
g_{fs}	Transconductance	/	1.06	/	S	$V_{DS}=20V, I_D=2.0A$	Fig. 4,5,6
		/	1.14	/		$V_{DS}=20V, I_D=2.0A, T_J=150^\circ\text{C}$	
C_{iss}	Input Capacitance	/	194	/	pF	$V_{GS}=0V$	Fig. 15,16
C_{oss}	Output Capacitance	/	13	/		$V_{DS}=1000V$	
C_{rss}	Reverse Transfer Capacitance	/	1.8	/		$f=1MHz$	
E_{oss}	C_{oss} Stored Energy	/	6.6	/	μJ	$V_{AC}=25mV$	
E_{ON}	Turn-On Switching Energy	/	5	/	mJ	$V_{DS}=1200V, V_{GS}=-5V/20V$	
E_{OFF}	Turn-Off Switching Energy	/	9.2	/		$I_D=2.0A, R_{G(ext)}=2.5\Omega, L=100\mu H$	
$t_{d(on)}$	Turn-On Delay Time	/	13.8	/	ns	$V_{DS}=1200V, V_{GS}=-5V/20V, I_D=2.0A$ $R_{G(ext)}=2.5\Omega, R_L=20\Omega$	
t_r	Rise Time	/	22.8	/			
$t_{d(off)}$	Turn-Off Delay Time	/	38	/			
t_f	Fall Time	/	14	/			
$R_{G(int)}$	Internal Gate Resistance	/	18	/	Ω	$f=1MHz, V_{AC}=25mV$	
Q_{GS}	Gate to Source Charge	/	5.4	/	nC	$V_{DS}=1200V$	
Q_{GD}	Gate to Drain Charge	/	7.6	/		$V_{GS}=-5V/20V$	
Q_G	Total Gate Charge	/	23	/		$I_D=2.0A$	

Reverse Diode Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_{SD}	Diode Forward Voltage	4.2	/	V	$V_{GS}=-5V, I_{SD}=25A$	Fig. 8,9,10
		3.9	/		$V_{GS}=-5V, I_{SD}=25A, T_J=150^\circ\text{C}$	
I_S	Continuous Diode Forward Current	/	7.0	A	$T_c=25^\circ\text{C}$	
t_{rr}	Reverse Recover Time	25	/	ns	$V_R=1200V, I_{SD}=2.0A$	
Q_{rr}	Reverse Recovery Charge	15	/	nC		
I_{rrm}	Peak Reverse Recovery Current	2.8	/	A		

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	1.8	/	$^\circ\text{C/W}$		
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	/	40			

Typical Performance

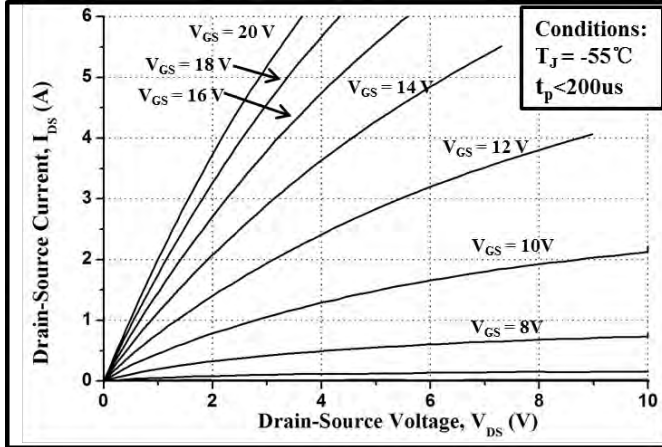


Figure 1. Output Characteristics $T_J = -55\text{ }^{\circ}\text{C}$

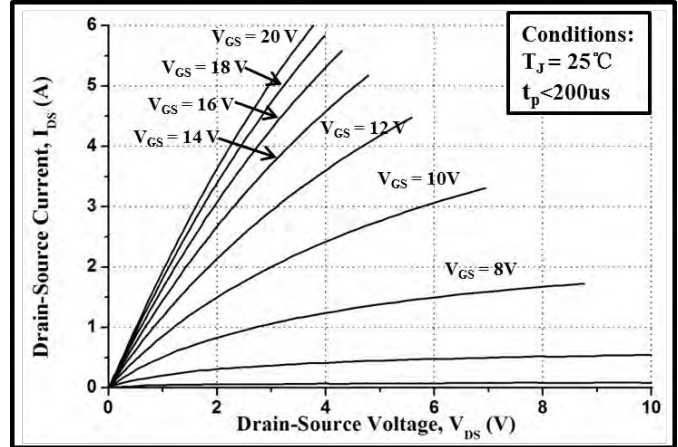


Figure 2. Output Characteristics $T_J = 25\text{ }^{\circ}\text{C}$

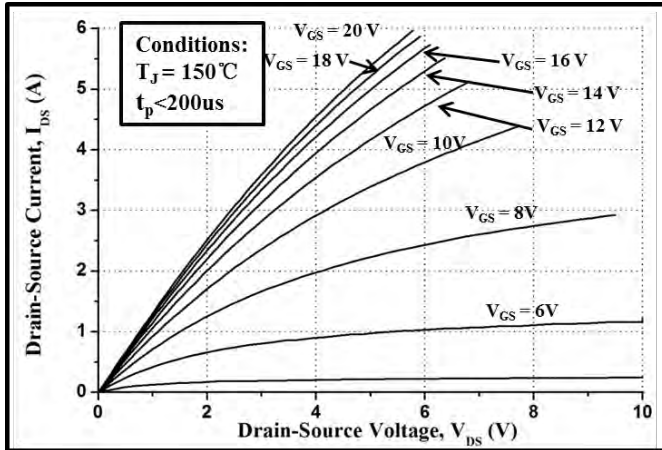


Figure 3. Output Characteristics $T_J = 150\text{ }^{\circ}\text{C}$

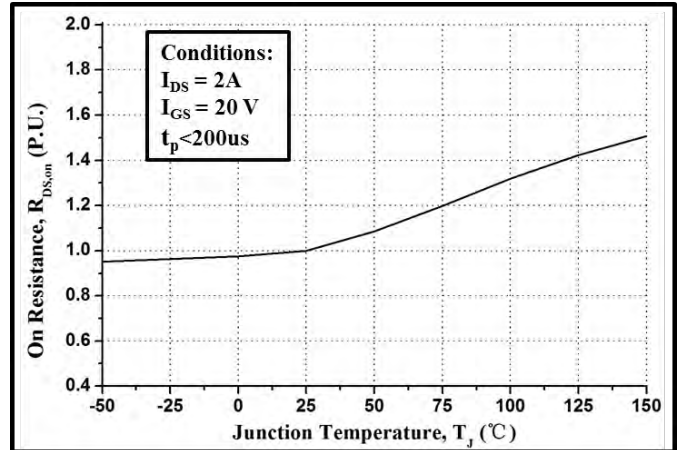


Figure 4. Normalized On-Resistance vs. Temperature

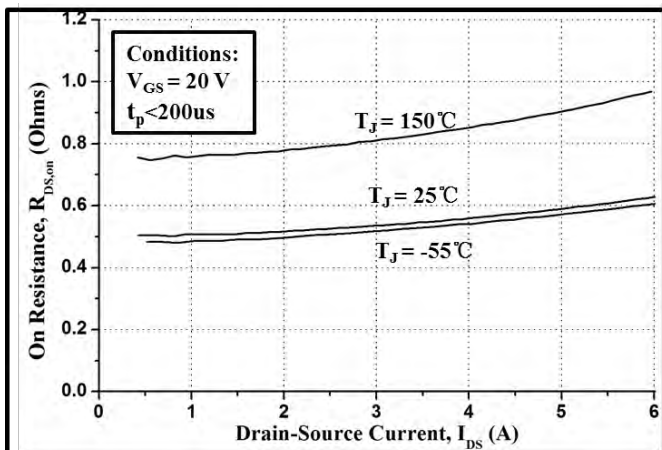


Figure 5. On-Resistance vs. Drain Current
For Various Temperatures

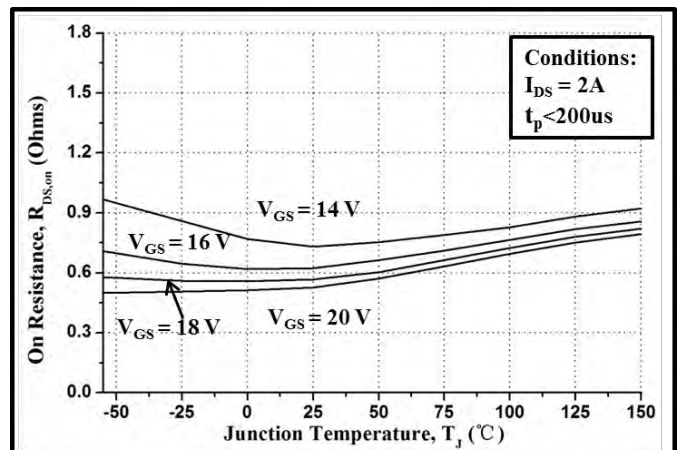


Figure 6. On-Resistance vs. Temperature
For Various Gate Voltage

Typical Performance

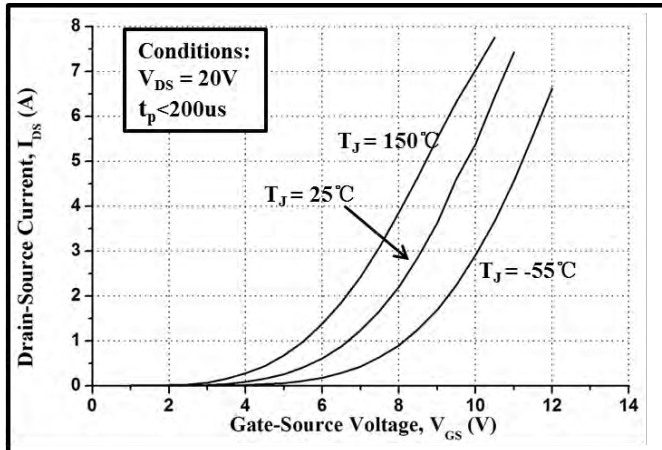


Figure 7. Transfer Characteristic for Various Junction Temperatures

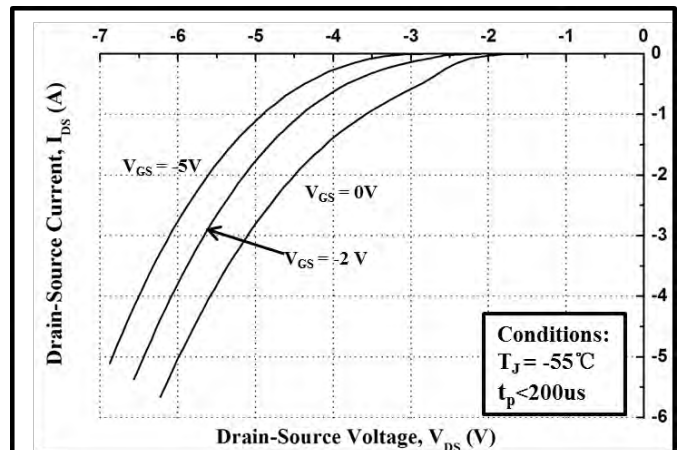


Figure 8. Body Diode Characteristic at -55 °C

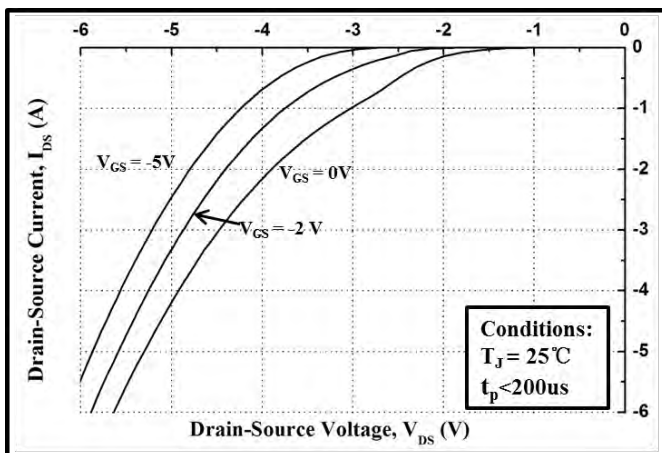


Figure 9. Body Diode Characteristic at 25 °C

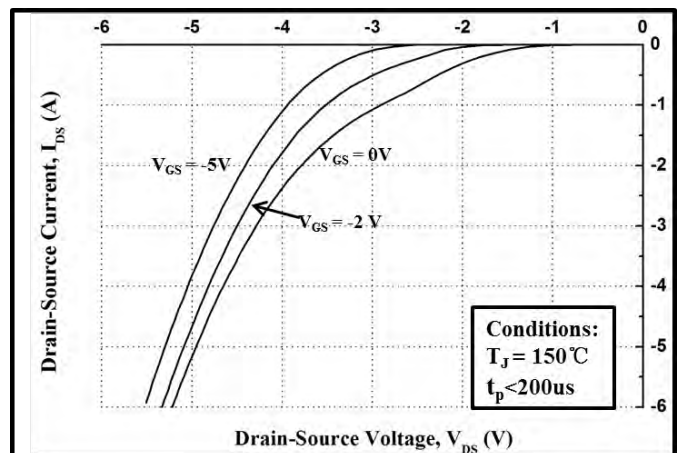


Figure 10. Body Diode Characteristic at 150 °C

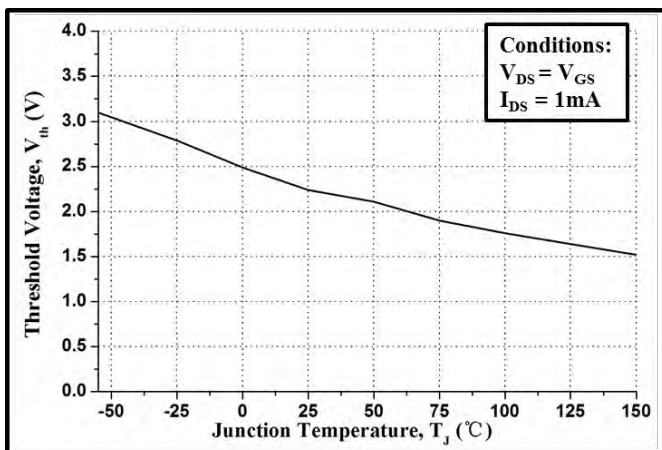


Figure 11. Threshold Voltage vs. Temperature

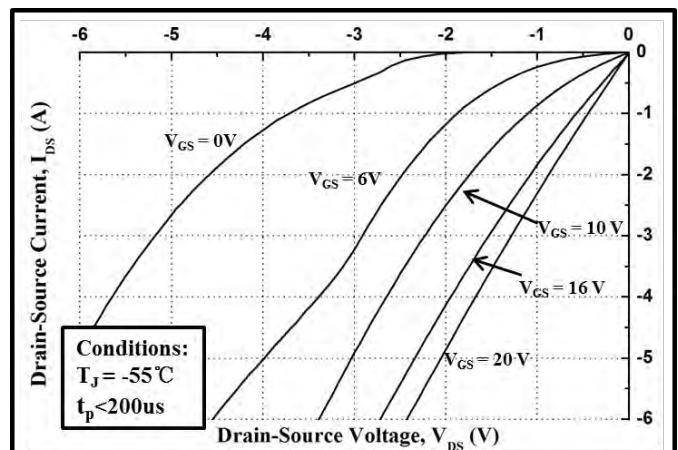


Figure 12. 3rd Quadrant Characteristic at -55 °C

Typical Performance

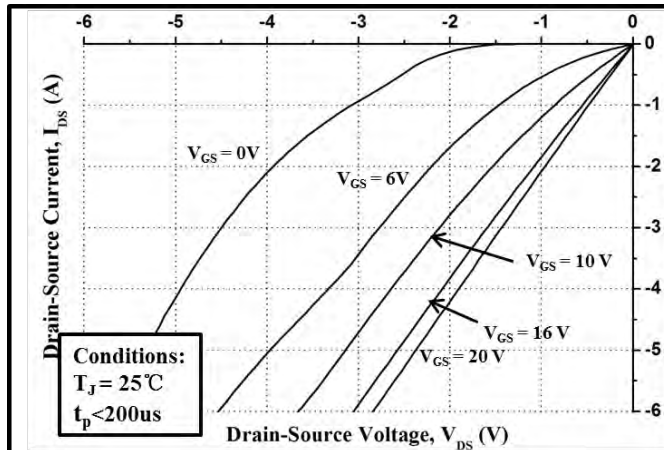


Figure 13. 3rd Quadrant Characteristic at 25 °C

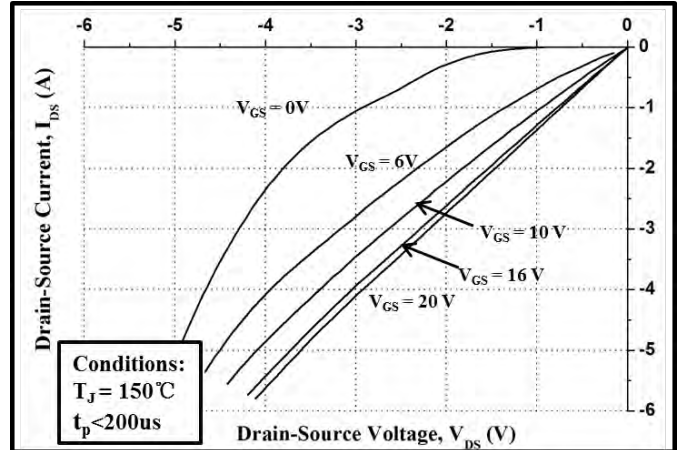


Figure 14. 3rd Quadrant Characteristic at 150 °C

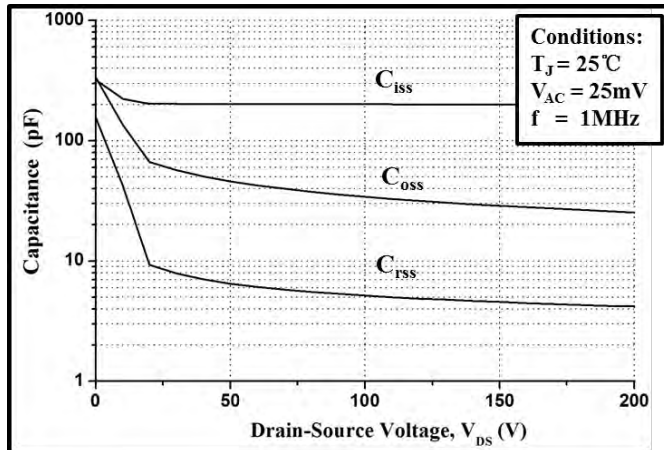


Figure 15. Capacitances vs. Drain-Source Voltage (0 - 200V)

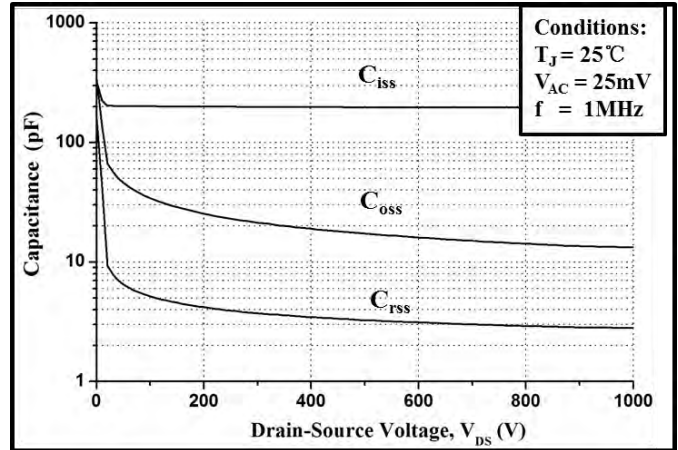


Figure 16. Capacitances vs. Drain-Source Voltage (0 - 1000V)

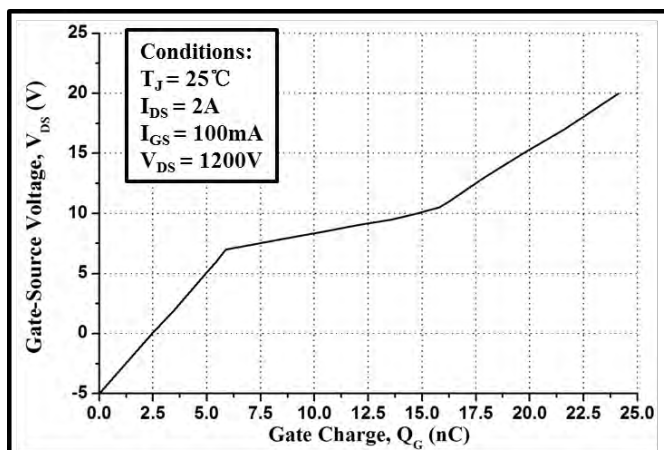


Figure 17. Gate Charge Characteristic

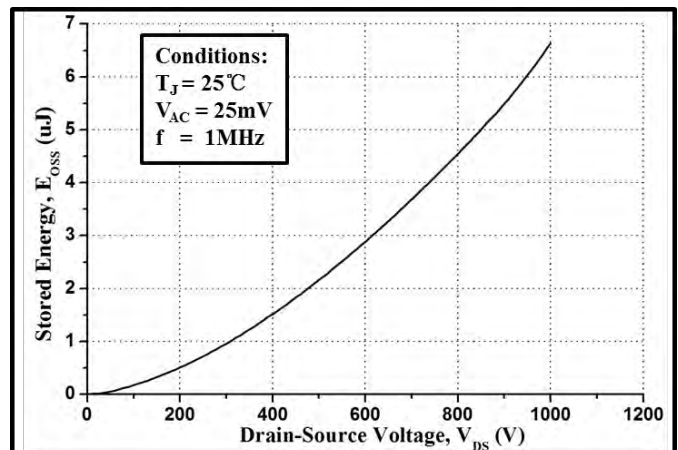
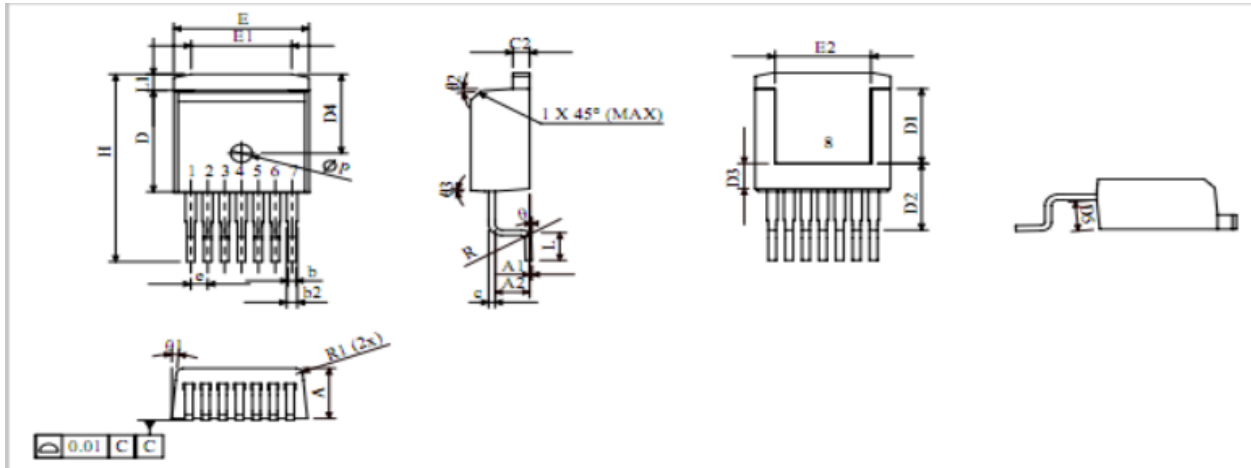


Figure 18. Output Capacitor Stored Energy

Package Dimensions



SYMBOL	MIN (mm)	MAX (mm)
A	4.30	4.57
A1	0.00	0.25
A2	2.595 REF	
b	0.50	0.70
b2	0.60	1.00
c	0.281	0.481
C2	1.17	1.37
D	9.025	9.125
D1	6.50	6.70
D2	5.39 REF	
D3	2.148	---
D4	7.000 REF	
D5	2.555	---
A2	2.595 REF	
E	10.13	10.23
E1	6.50	8.60
E2	6.778	7.665
e	1.27 TYP	
H	15.043	17.313
L	2.324	2.700
L1	0.968	1.868
R	0.506 REF	
R1	0.500 REF	
P	1.60 REF	
θ	0°	8°
θ1	4.5°	5.5°
θ2	4°	6°
θ3	4°	6°

1	GATE
2	KELVIN
3	SOURCE
4	
5	
6	
7	DRAIN
8	