

<b>VDS</b>	<b>RDS(on)</b>	<b>ID@25°C</b>
1200V	160mΩ	18A

**Applications:**

- Solar Inverters
- Switch Mode Power Supplies
- High Voltage DC/DC Converters
- EV Charging
- Motor Drives

**Features:**

- High Blocking Voltage with Low On-Resistance
- High Speed Switching with Low Capacitances
- Easy to Parallel and Simple to Drive
- Avalanche Ruggedness

**Benefits:**

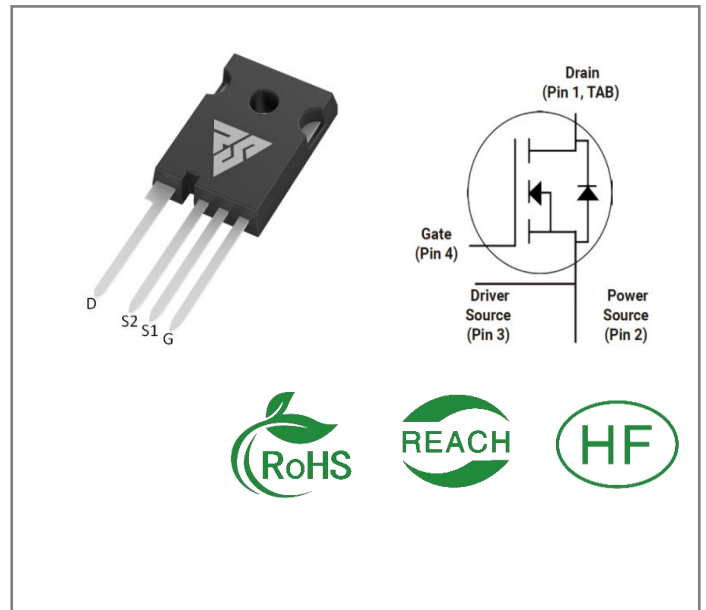
- Higher System Efficiency
- Reduced Cooling Requirements
- Increased Power Density
- Increased System Switching Frequency

**Ordering Information**

Part Number	Package	Marking	Packing	Qty.
RSM120160Z	TO-247-4	RSM120160Z	Tube	30 PCS

**Maximum Ratings** (T<sub>J</sub>= 25°C unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
VDSmax	Drain - Source Voltage	1200	V	VGS=0V, ID =100μA	
VGSmax	Gate - Source Voltage	-10/+2 5	V	Absolute maximum values	
VGSop	Gate - Source Voltage	-5/+20	V	Recommended operational values	
ID	Continuous Drain Current	18 12	A	VGS=20V, TC =25°C VGS=20V, TC =100°C	
ID(pulse)	Pulsed Drain Current	40	A	Pulse width tp limited by TJmax	
PD	Power Dissipation	125	W	TC =25°C, TJ =150°C	
TL	Solder Temperature	260	°C		
TJ, Tstg	Operating Junction and Storage Temperature	-40 to + 150	°C		



**Electrical Characteristics** (T<sub>J</sub>= 25°C unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions	Note	
V(BR)DSS	Drain-Source Breakdown Voltage	1200			V	VGS=0V, ID =100μA		
VGS(th)	Gate Threshold Voltage		2.0	2.4	4.0	V	VGS= VDS, IDS=2.5mA, TC =25°C	
				1.8		V	VGS= VDS, IDS=2.5mA, TC =150°C	
IDSS	Zero Gate Voltage Drain Current		1	100	μA	VDS= 1200V, VGS=0V		
IGSS	Gate-Source Leakage Current		10	250	nA	VGS=25V, VDS= 0V		
RDS(on)	Drain-Source on-state Resistance		160	196	mΩ	VGS=20V, ID =10A, TC =25°C		
			280			VGS=20V, ID =10A, TC =150°C		
Ciss	Input Capacitance		890		pF	VGS=0V, VDS=1000 V, f=1MHz, VAC=25 mV		
Coss	Output Capacitance		54					
Crss	Reverse Transfer Capacitance		8.5					
EON	Turn-On Switching Energy		315		μJ	VDS =800V, VGS =-5/20V, ID = 10A, RG(ext) = 2.5Ω, L= 200μH		
EOFF	Turn-Off Energy		63					
td(on)	Turn-On Delay Time		8		ns	VDS =800V, VGS =-5/20 V ID = 10A, RG(ext) =2.5 Ω , RL =80Ω		
tr	Rise Time		9					
td(off)	Turn-Off Delay Time		14					
tf	Fall Time		9					
RG(int)	Internal Gate Resistance		5.5		Ω	f=1 MHz, VAC=25mV		
Qgs	Gate to Source Charge		17		nC	VDS=800V, VGS=-5/20V ID =10A		
Qgd	Gate to Drain Charge		9		nC			
Qg	Total Gate Charge		49					

**Reverse Diode Characteristics** (T<sub>J</sub>= 25°C unless otherwise specified)

Symbol	Parameter	Typ.	Max	Unit	Test Conditions	Note
VSD	Diode Forward Voltage	4.2		V	VGS=-5V, ISD = 10 A, T <sub>J</sub> = 25°C	
		3.9		V	VGS=-5V, ISD= 10 A, T <sub>J</sub> = 150°C	
IS	Continuous Diode Forward Current		23	A	VGS=-5V, TC= 25°C	
trr	Reverse Recovery time	28		ns	ISD= 10 A, VR = 800V	
Qrr	Reverse Recovery Charge	50		nC		
Irrm	Peak Reverse Recovery Current	3		A		

**Thermal Characteristics** (T<sub>J</sub>= 25°C unless otherwise specified)

Symbol	Parameter	Typ.	Unit	Test Conditions	Note
R <sub>θJC</sub>	Thermal Resistance from Junction to Case	0.9	°C/W		
R <sub>θJA</sub>	Thermal Resistance From Junction to Ambient	40			

Typical Feature Curve

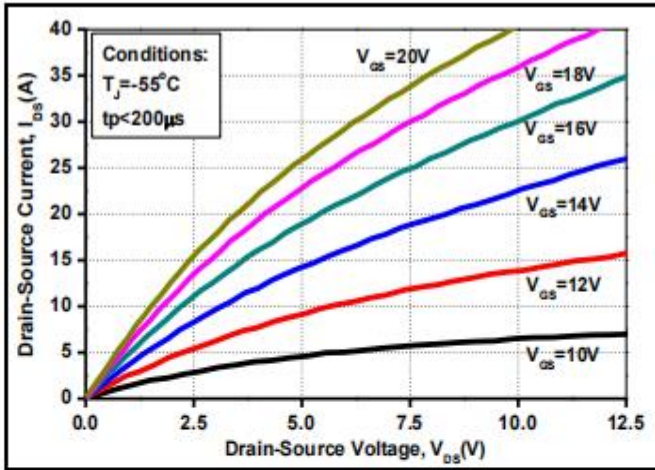


Figure 1. Output Characteristics  $T_J = -55^\circ\text{C}$

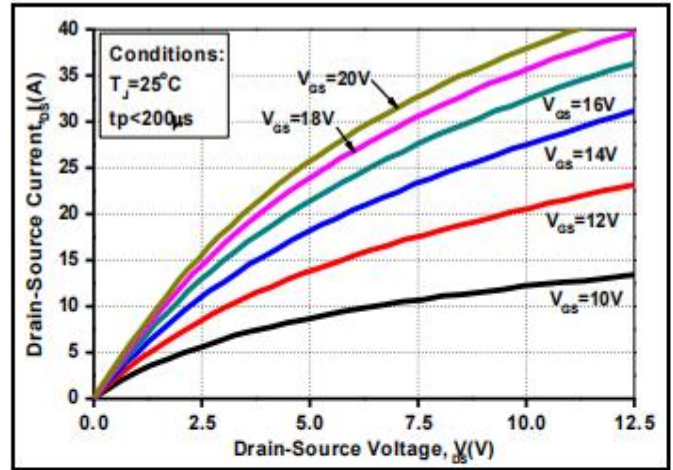


Figure 2. Output Characteristics  $T_J = 25^\circ\text{C}$

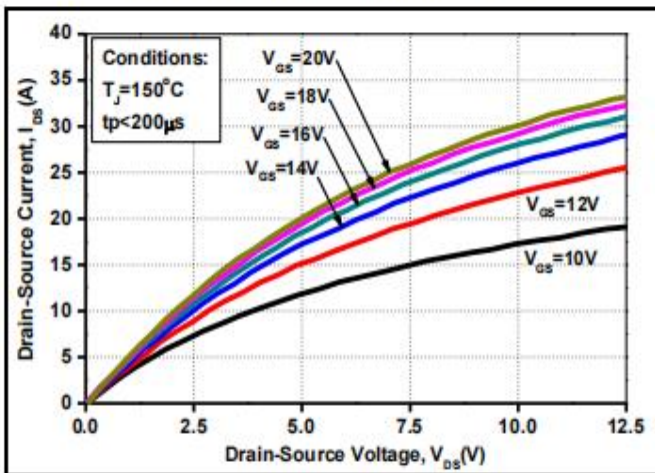


Figure 3. Output Characteristics  $T_J = 150^\circ\text{C}$

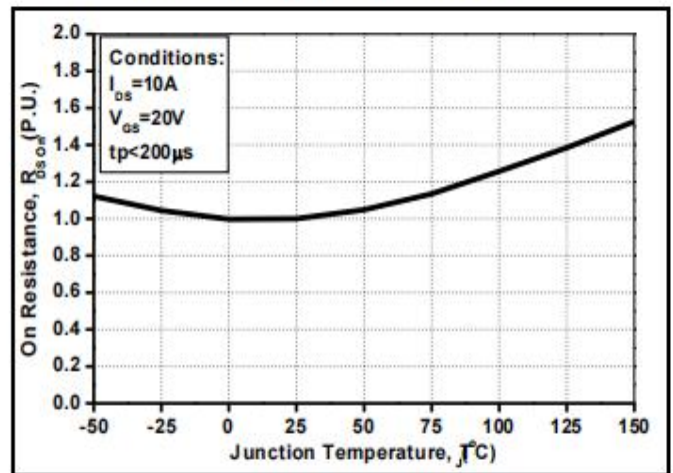


Figure 4. Normalized On-Resistance vs. Temperature

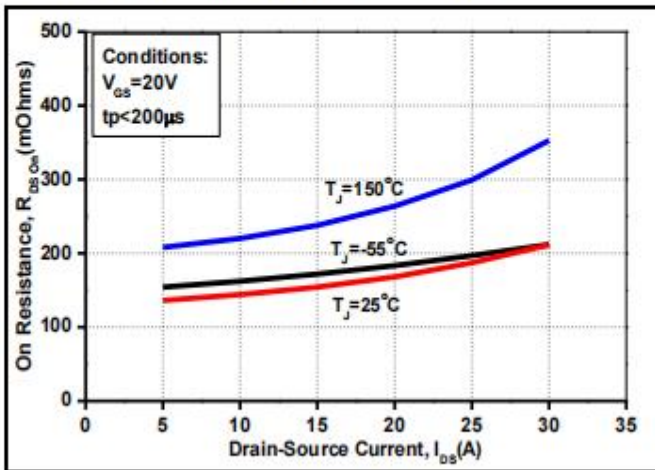


Figure 5. On-Resistance vs. Drain Current For Various Temperatures

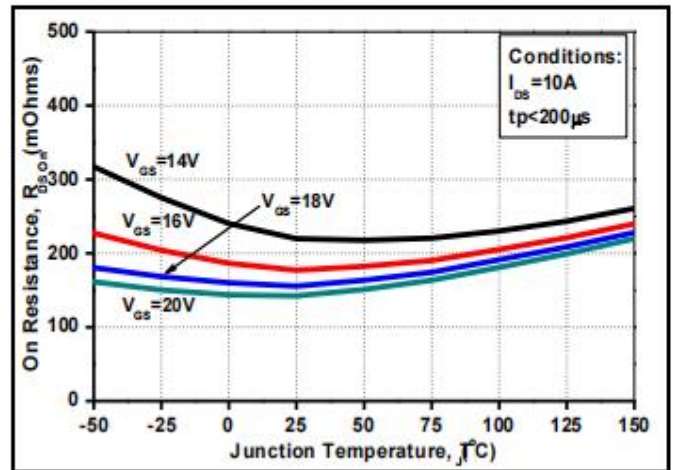


Figure 6. On-Resistance vs. Temperature For Various Gate Voltage



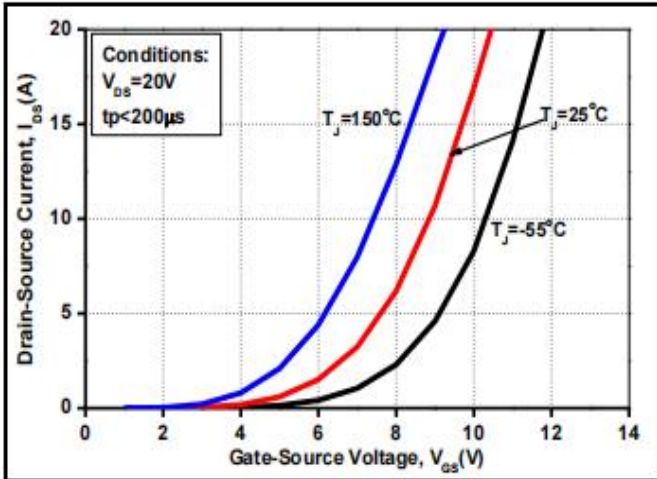


Figure 7. Transfer Characteristic for Various Junction Temperatures

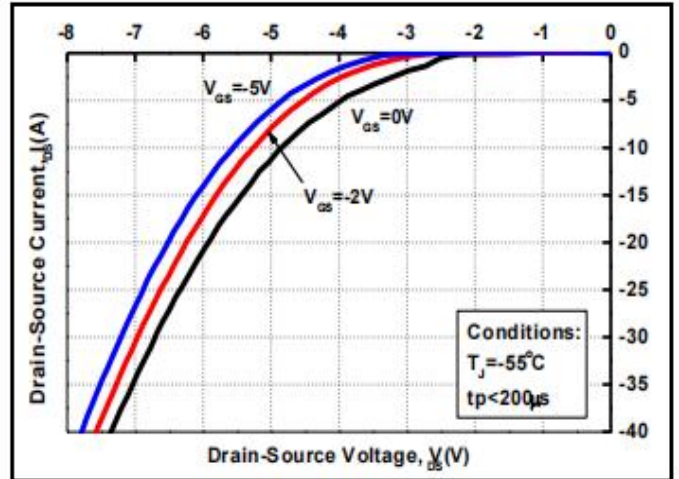


Figure 8. Body Diode Characteristic at -55 °C

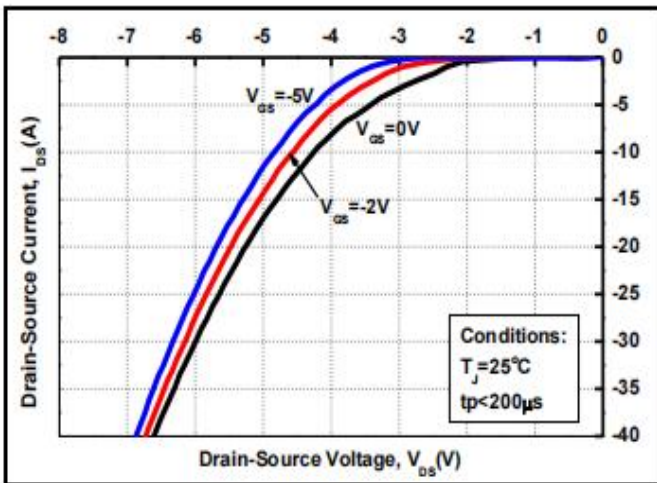


Figure 9. Body Diode Characteristic at 25 °C

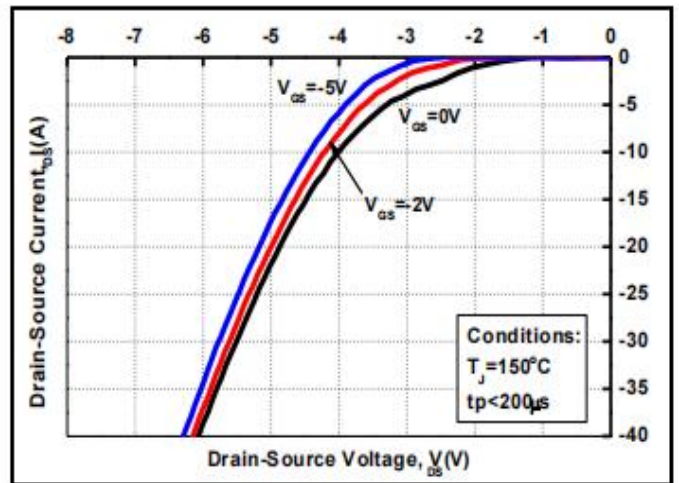


Figure 10. Body Diode Characteristic at 150 °C

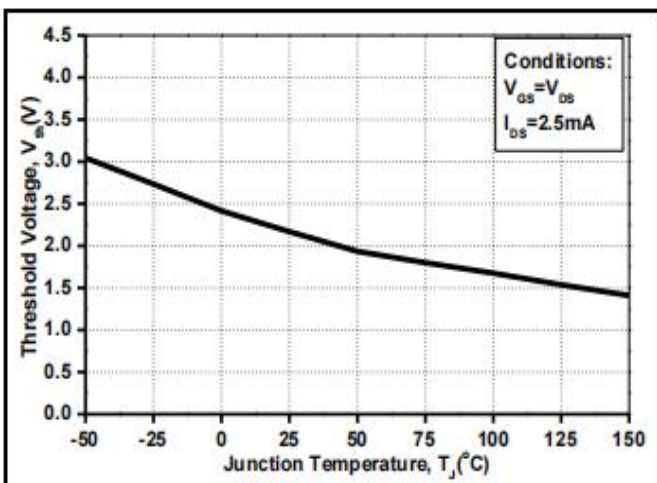


Figure 11. Threshold Voltage vs. Temperature

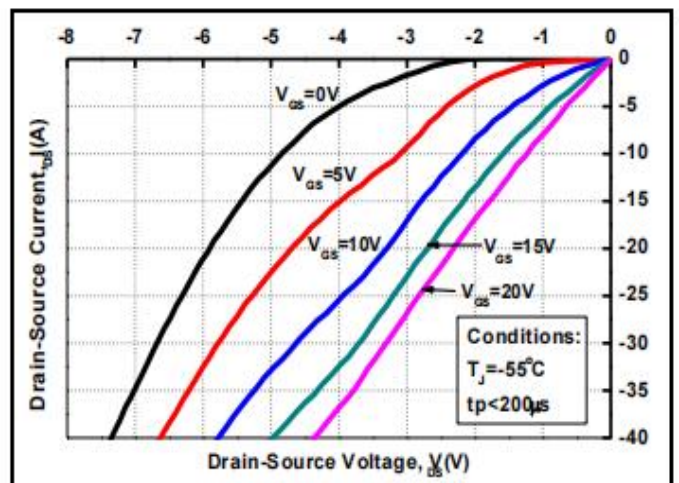


Figure 12. 3rd Quadrant Characteristic at -55 °C

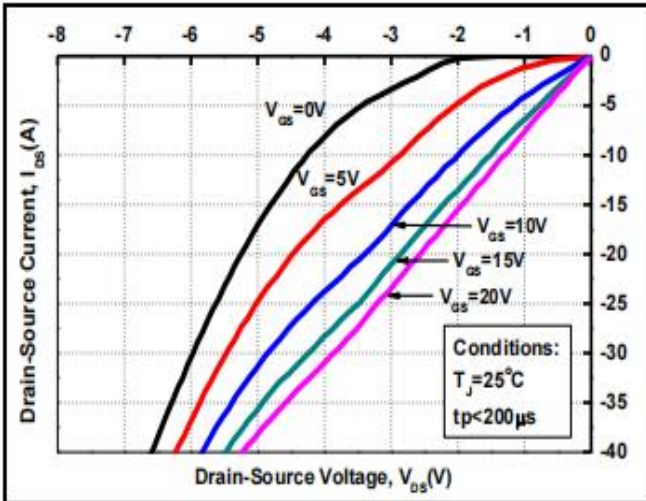


Figure 13. 3rd Quadrant Characteristic at 25 °C

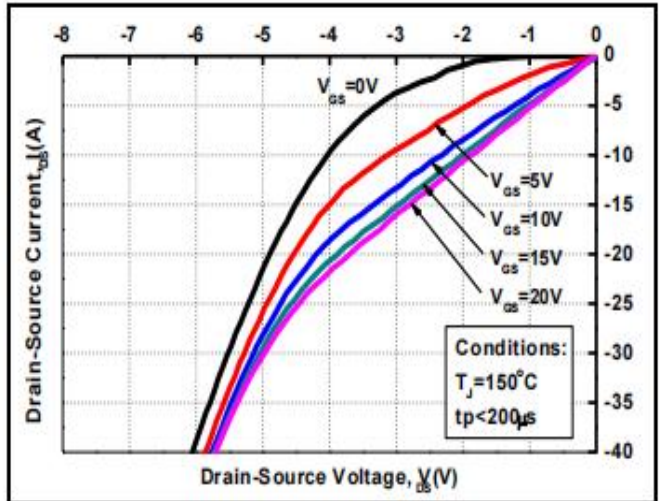


Figure 14. 3rd Quadrant Characteristic at 150 °C

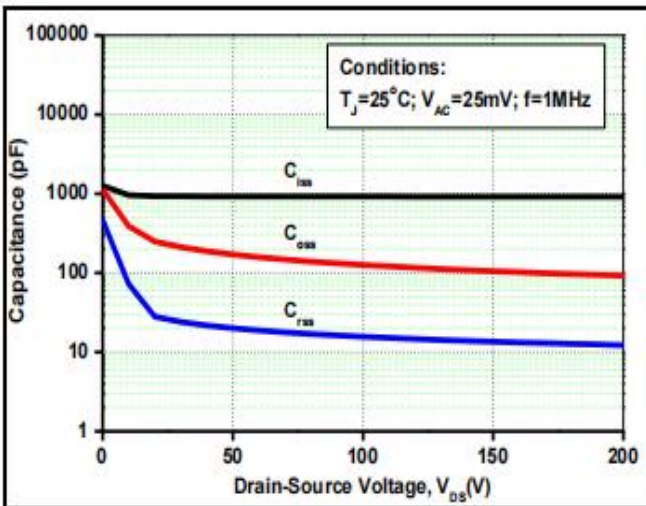


Figure 15. Capacitances vs. Drain-Source Voltage (0 - 200V)

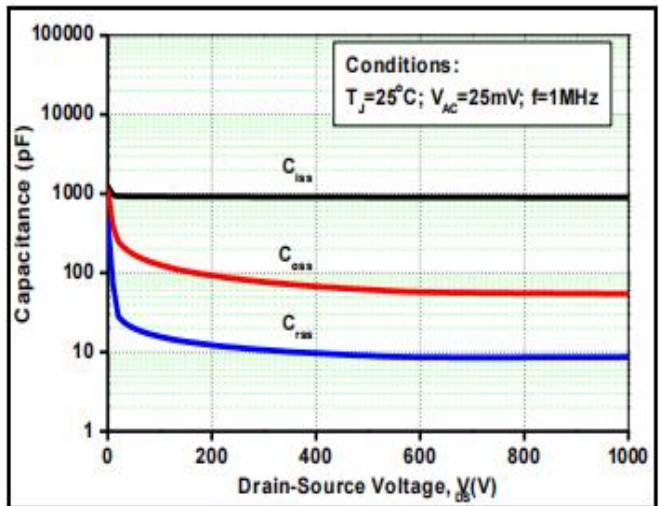
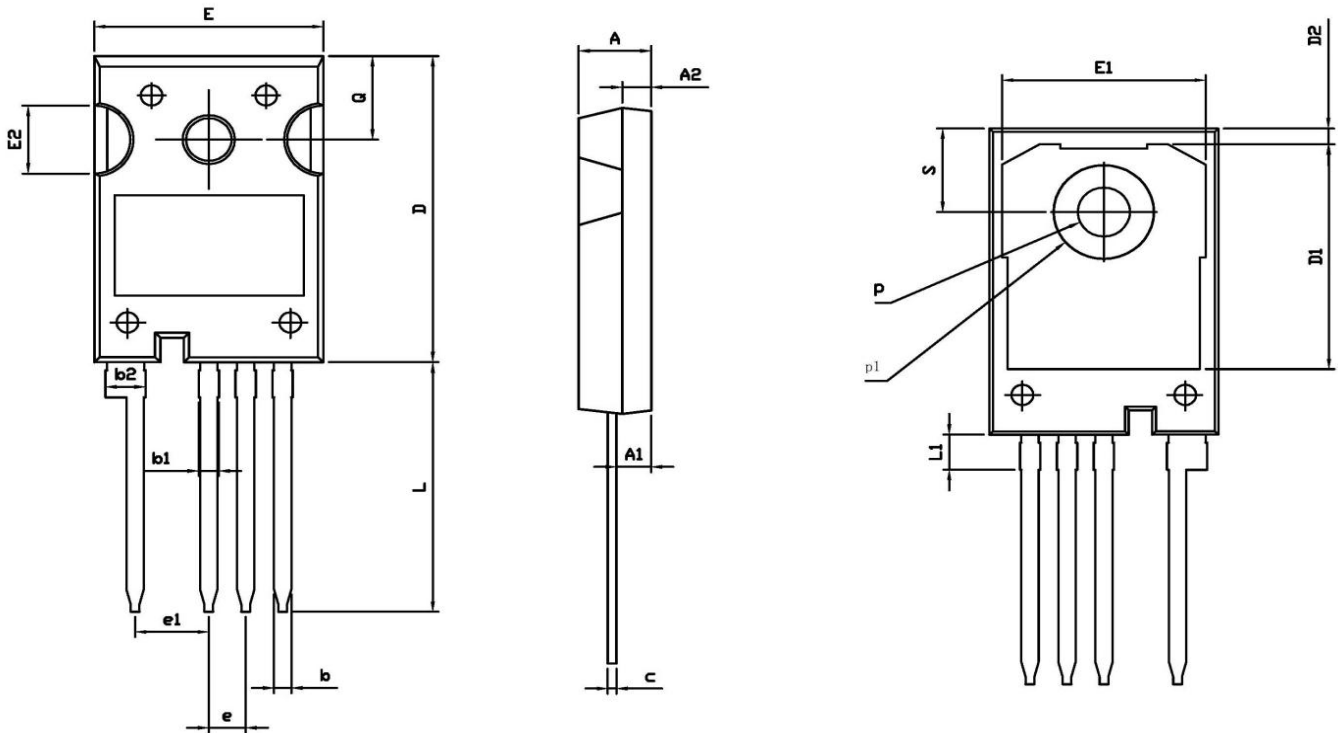
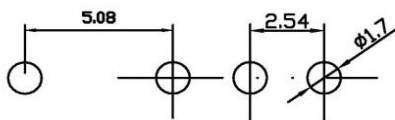


Figure 16. Capacitances vs. Drain-Source Voltage (0 - 1000V)

Package outline drawing(TO-247-4 Unit: mm)



RECOMMENDED LAND PATTERN



UNIT: mm

	MIN	NOM	MAX
A	4.80	5.00	5.20
A1	2.25	2.40	2.45
A2	1.85	2.00	2.15
b	1.05	1.20	1.35
b1	1.00	1.30	1.60
b2	2.35	2.65	2.95
c	0.50	0.60	0.70
D	22.34	22.54	22.74
D1	16.00	16.50	17.00
D2	0.97	1.17	1.37
e	2.34	2.54	2.74
e1	4.88	5.08	5.28
E	15.60	15.80	16.00
E1	13.50	14.00	14.50
E2	4.80	5.00	5.20
L	18.08	18.38	18.68
L1	2.38	2.58	2.78
p	3.50	3.60	3.70
p1	6.60	6.80	7.00
Q	6.00	6.15	6.30
S	6.00	6.15	6.30



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