

Feature

- High density cell design for lower $R_{DS(on)}$
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high EAS
- Excellent package for good heat dissipation

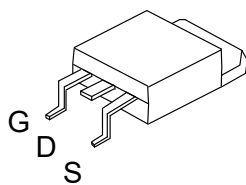


Product Summary

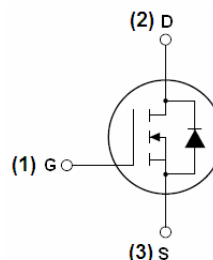
V_{DS}	100	V
$R_{DS(on), Typ @ V_{GS}=10V}$	31	mΩ
I_D	33	A

Application

- Power switching application
- Hard switched and High frequency circuits
- Uninterruptible power supply



TO-263



Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	33	A
Drain Current-Pulsed (Note 1)	I_{DM}	132	A
Maximum Power Dissipation($T_c=25^\circ\text{C}$)	P_D	70	W
Single pulse avalanche energy (Note 2)	E_{AS}	96	mJ
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 175	$^\circ\text{C}$

Thermal Characteristic

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.15	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Ambient (PCB mount)	$R_{\theta JA}$	40	$^\circ\text{C/W}$

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =250μA	100	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V	-	-	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1	1.7	2.5	V
Drain-Source On-State Resistance ^(Note 3)	R _{DS(ON)}	V _{GS} =10V, I _D =12A	-	31	37	mΩ
		V _{GS} =4.5V, I _D = 8A	-	32	42	
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =15A	-	11	-	S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz	-	2300	-	pF
Output Capacitance	C _{oss}		-	215	-	pF
Reverse Transfer Capacitance	C _{rss}		-	195	-	pF
Switching Characteristics ^(Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =50V, I _D =20A, V _{GS} =10V, R _{GEN} =10Ω	-	29	-	nS
Turn-on Rise Time	t _r		-	13	-	nS
Turn-Off Delay Time	t _{d(off)}		-	58.2	-	nS
Turn-Off Fall Time	t _f		-	13.4	-	nS
Total Gate Charge	Q _g	V _{DS} =80V, I _D =20A V _{GS} =10V	-	55	-	nC
Gate-Source Charge	Q _{gs}		-	15	-	nC
Gate-Drain Charge	Q _{gd}		-	20	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =20A	-	-	1.2	V
Reverse Recovery Time	T _{rr}	T _j =25℃, IF=10A, di/dt=100A/uS ^(note3)	-	58	-	nS
Reverse Recovery Charge	Q _{rr}		-	110	-	nC

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. EAS condition : $T_j=25^\circ C, V_{DD}=50V, V_{GS}=10V, L=0.5mH, R_g=25\Omega$
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production.

Characteristics Curves

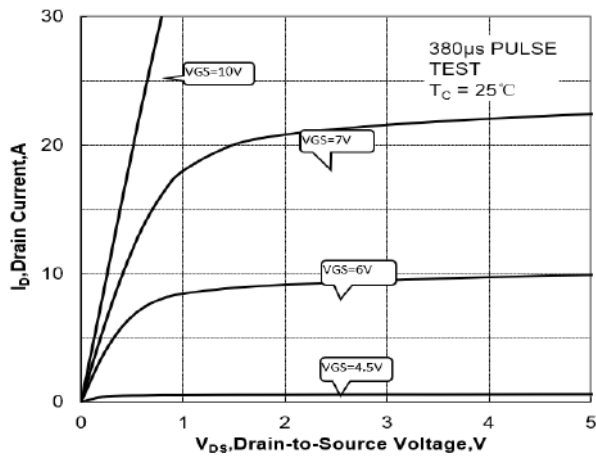
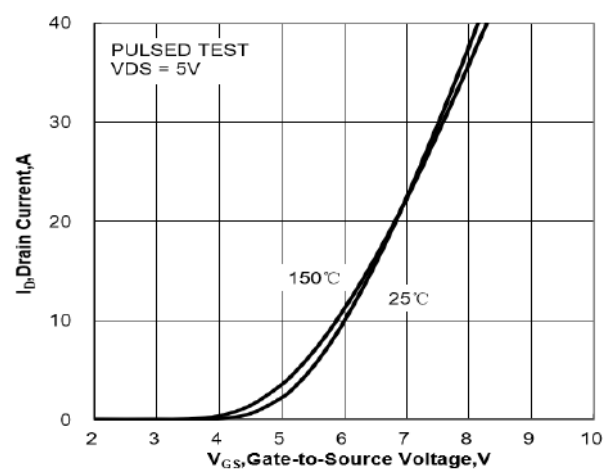
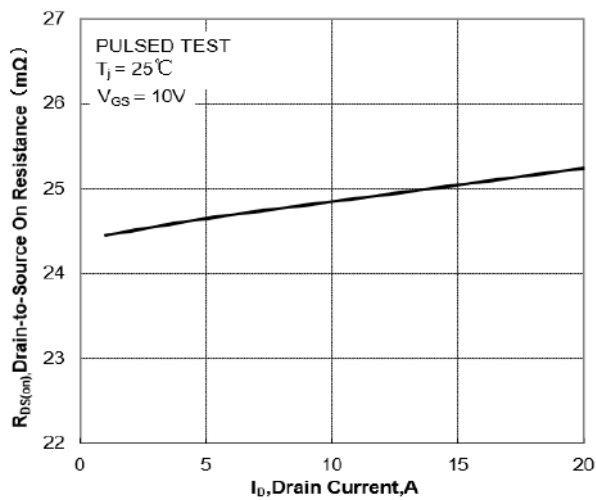
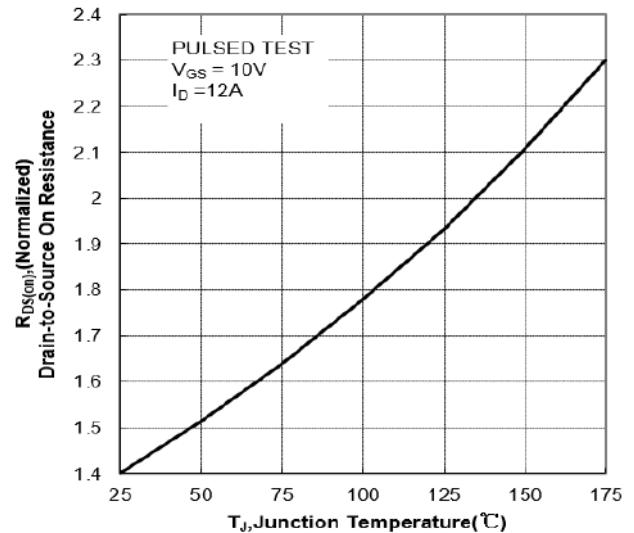
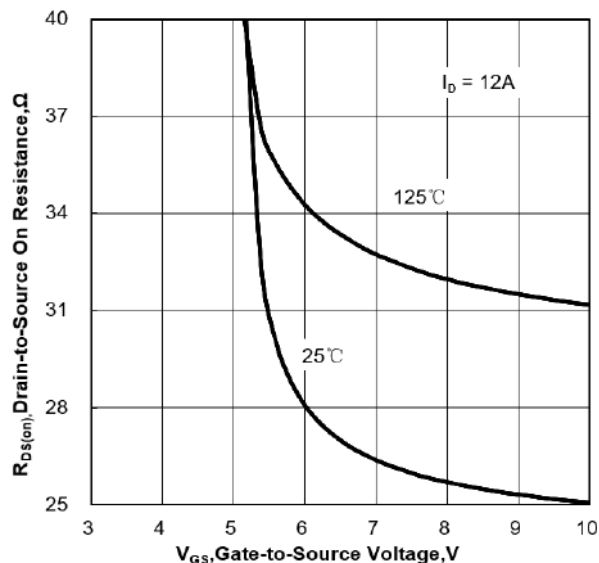
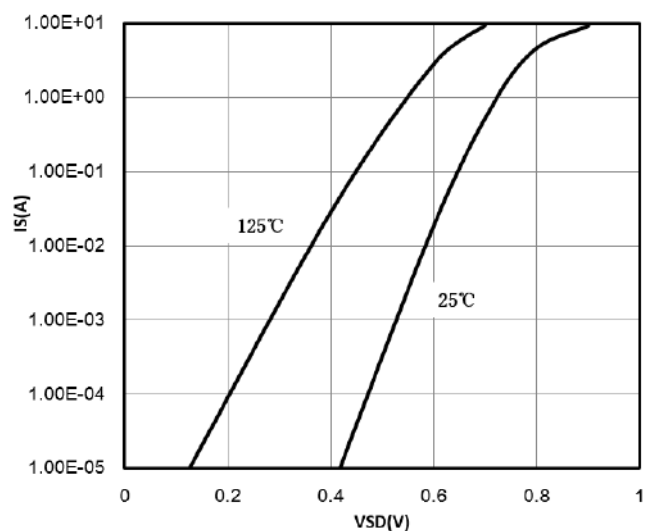
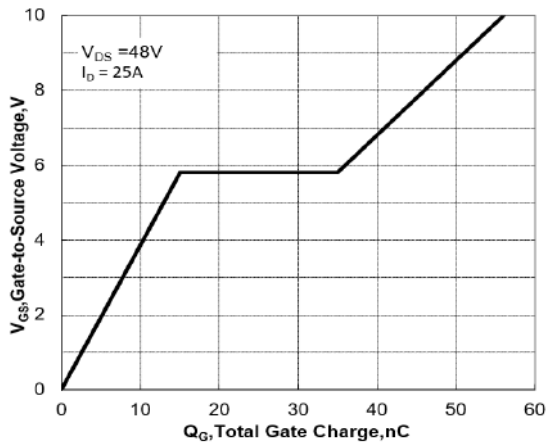
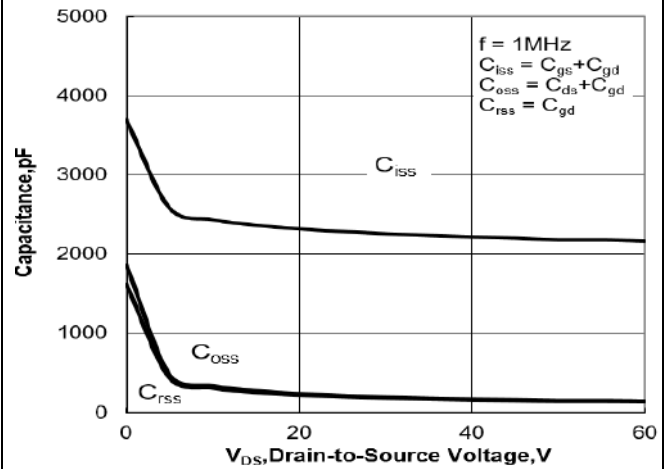
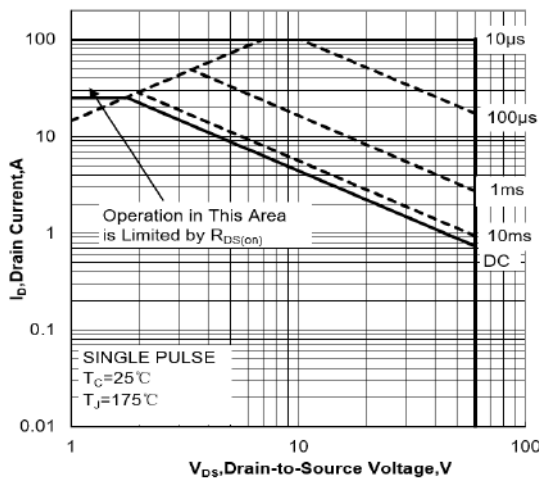
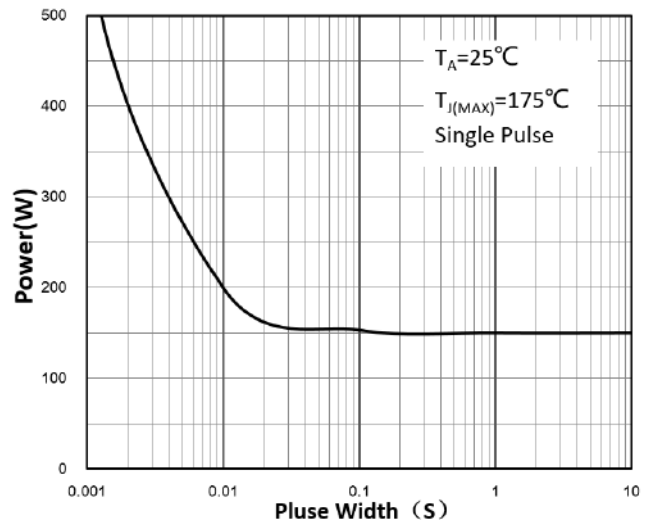
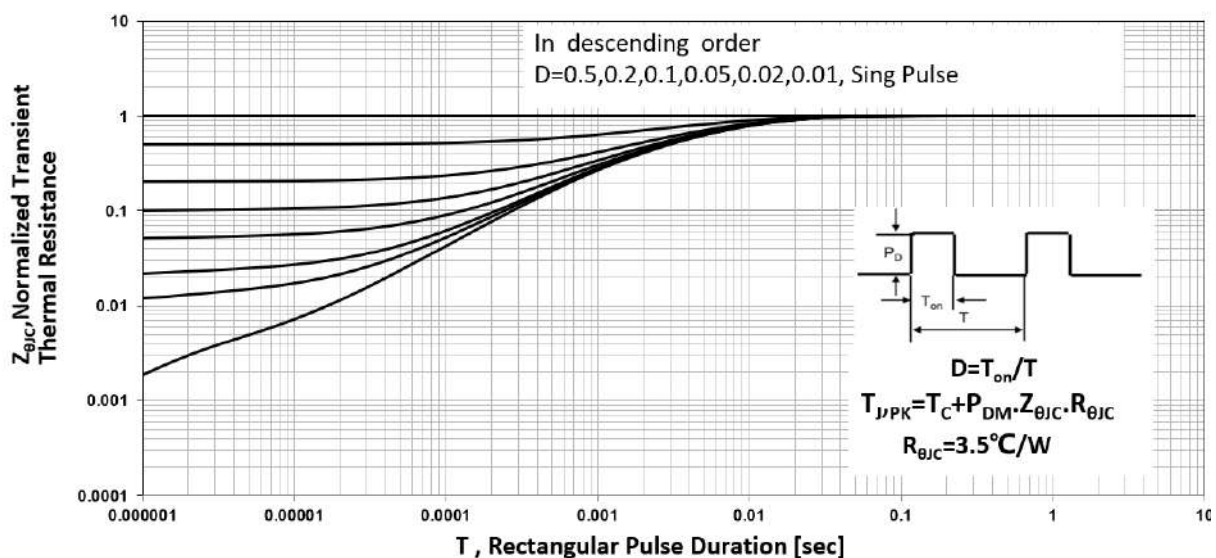
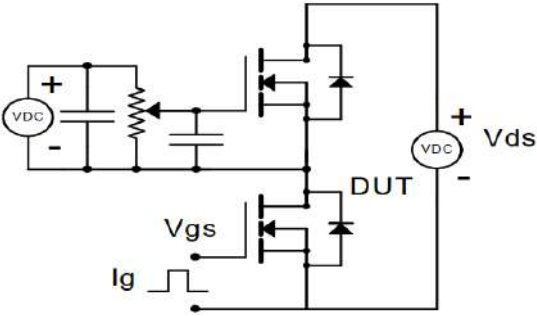
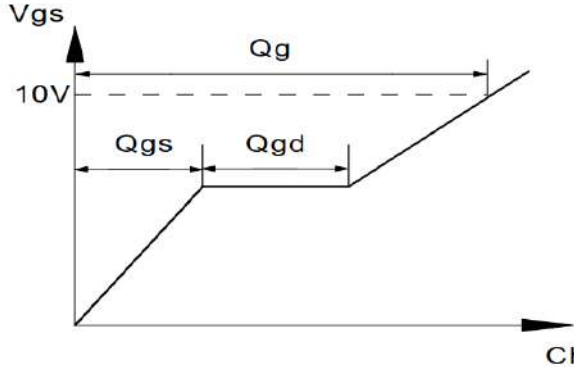
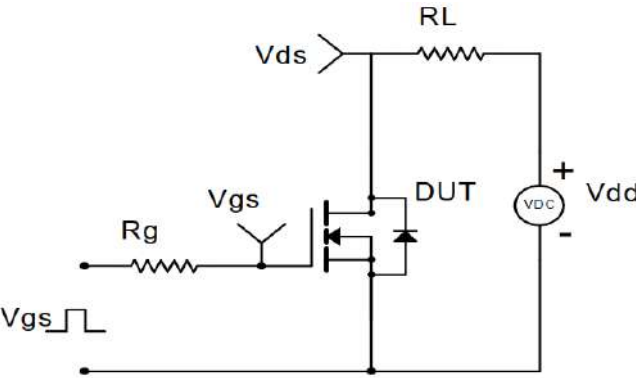
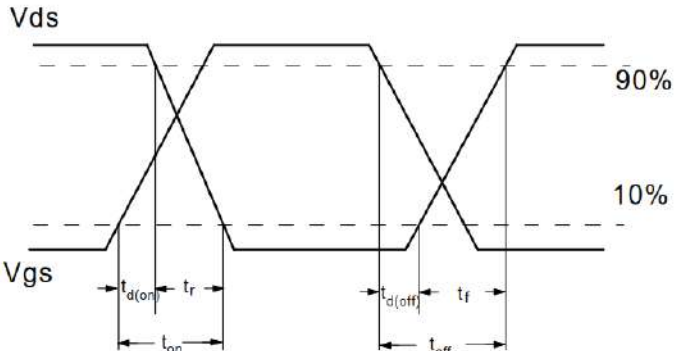
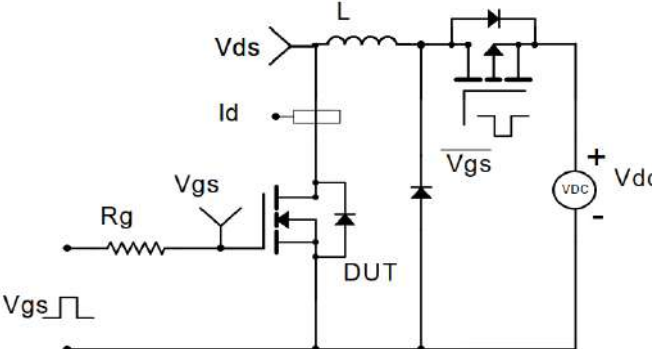
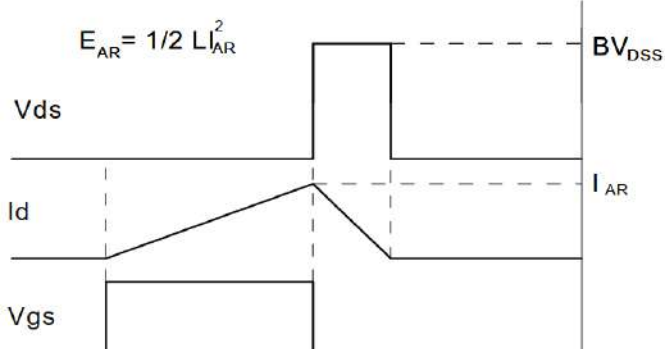
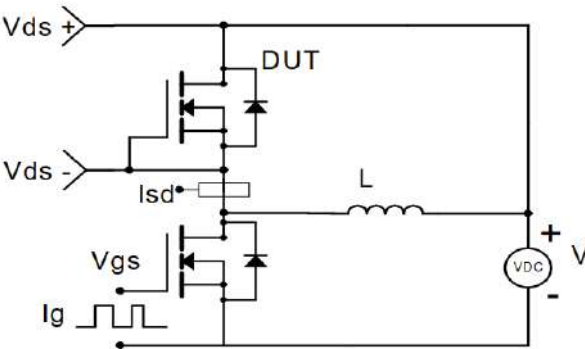
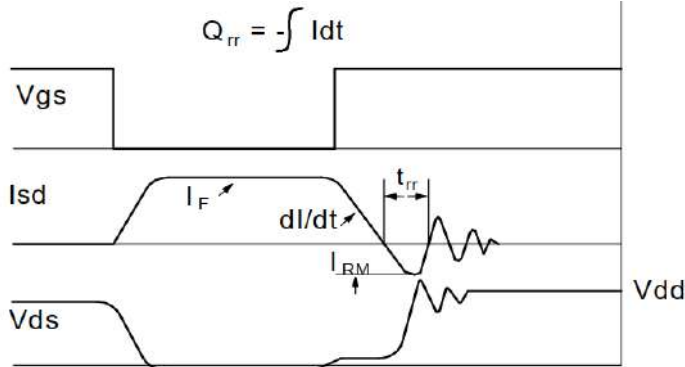
Figure 1 Output Characteristics

Figure 2 Transfer Characteristics

Figure 3 On-Resistance vs. I_D and V_{GS}

Figure 4 On-Resistance vs. Junction Temperature

Figure 5 On-Resistance vs. V_{GS}

Figure 6 Body Diode Forward Voltage


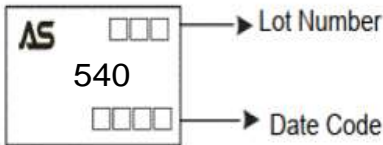
Figure 7 Gate-Charge Characteristics

Figure 8 Capacitance Characteristics

Figure 9 Maximum Forward Biased Safe Operation Area

Figure 10 Single Pulse Power Rating Junction-to-Ambient

Figure 11 Normalized Maximum Transient Thermal Impedance


Test Circuit and Waveform

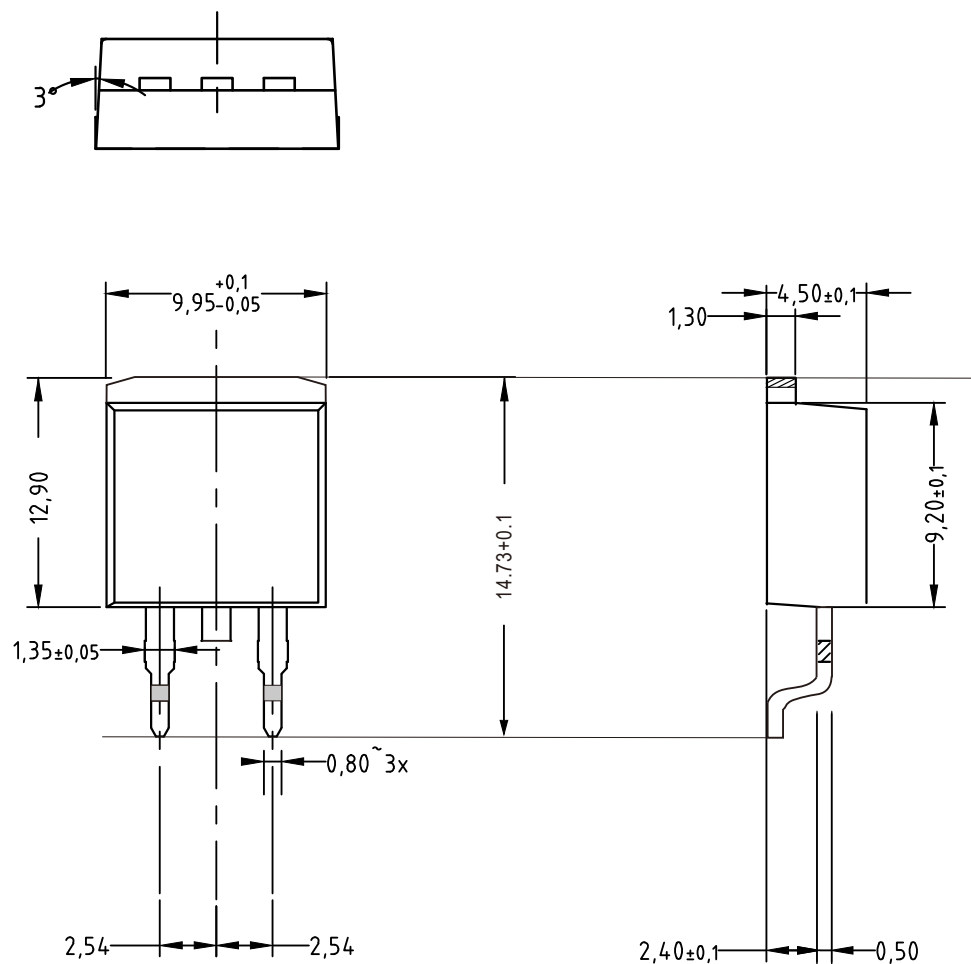
Gate Charge Test Circuit	Gate Charge Test Waveform
	
Resistive Switching Test Circuit	Resistive Switching Test Waveforms
	
Unclamped Inductive Switching (UIS) Test Circuit	Unclamped Inductive Switching (UIS) Test Waveforms
	
Diode Recovery Test Circuit	Diode Recovery Test Waveforms
	

Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM540G-R	540	TO-263	Tape&Reel	800/Reel

PACKAGE	MARKING
TO-263	 <p>The diagram shows a TO-263 package with the following markings: 'AS' in the top left, '540' in the center, and two sets of four empty boxes (one above and one below '540'). An arrow points from the top set of boxes to the text 'Lot Number', and another arrow points from the bottom set of boxes to the text 'Date Code'.</p>

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