

General Features

- 100% avalanche tested
- Pb-free lead plating; RoHS compliant

Application

- Load Switch
- DC-DC converter
- Power management

Product Summary



V_{DS}	-40	V
$R_{DS(on),TYP} @ V_{GS}=-10V$	13.5	m Ω
I_D	-55	A

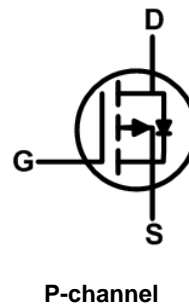
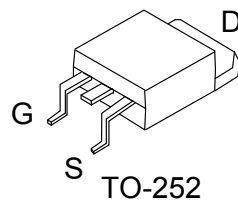


Table 1. Absolute Maximum Ratings ($T_A=25^\circ\text{C}$)

Parameter	Symbol	Test Condition	Value	Unit
Continuous drain current (Silicon Limited)	I_D	$T_C=25^\circ\text{C}$	-55	A
Drain to Source Voltage	V_{DS}	-	-40	V
Gate to Source Voltage	V_{GS}	-	± 20	V
Pulsed Drain Current	I_{DM}	-	-220	A
Avalanche Energy, Single Pulse	E_{AS}	$V_{DS}=-20V, V_{GS}=-10V, L=0.5mH, R_g=25\Omega$	150	mJ
Power Dissipation	P_D	$T_C=25^\circ\text{C}$	42	W
Operating and Storage Temperature	T_J, T_{stg}	-	-55 to 150	$^\circ\text{C}$

Electrical Characteristics at T_j=25°C (unless otherwise specified)
Static Characteristics

Parameter	Symbol	Test Condition	Value			Unit
			Min.	Typ.	Max.	
Drain to Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	-40	-		V
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250μA	-1.0	-1.7	-2.5	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{GS} =0V, V _{DS} =-40V, T _j =25°C	-	-0.01	-1	μA
		V _{GS} =0V, V _{DS} =-40V, T _j =100°C	-	-	-100	
Gate to Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	10	±100	nA
Drain to Source on Resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-20A	-	13.5	16	mΩ
		V _{GS} =-4.5V, I _D =-15A	-	18.6	22	
Gate Resistance	R _G	V _{GS} =0V, V _{DS} =0V, f=1MHz	-	6.5	-	Ω

Dynamic Characteristics

Parameter	Symbol	Test Condition	Value			Unit
			Min.	Typ.	Max.	
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =-30V, f=1MHz	-	1803	-	pF
Output Capacitance	C _{oss}		-	225	-	
Reverse Transfer Capacitance	C _{rss}		-	130	-	
Total Gate Charge	Q _g	V _{GS} =-4.5V, V _{DS} =-20V, I _D =-30A	-	58	-	nC
Gate-Source Charge	Q _{gs}		-	7	-	
Gate-Drain Charge	Q _{gd}		-	10	-	
Turn on delay time	t _{d(on)}	V _{GS} =-10V, V _{DD} =-20V, I _D =-15A, R _{GEN} =6.3		10		ns
Rise time	t _r			24		
Turn off delay time	t _{d(off)}			40		
Fall time	t _f			9		

Diode Characteristics

Parameter	Symbol	Test Condition	Value			Unit
			Min.	Typ.	Max.	
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =-20A	-	-0.92	-1.2	V

Typical Performance Characteristics

Figure 1: Output Characteristics

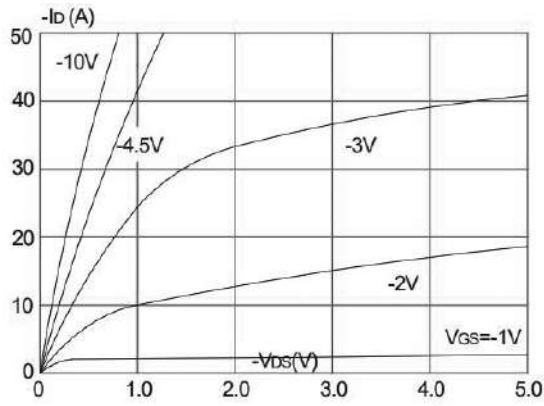


Figure 2: Typical Transfer Characteristics

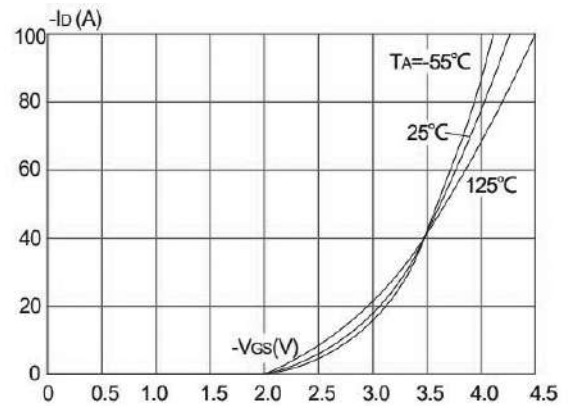


Figure 3: On-resistance vs. Drain Current

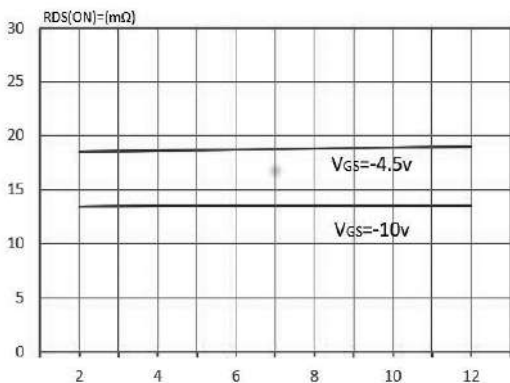


Figure 4: Body Diode Characteristics

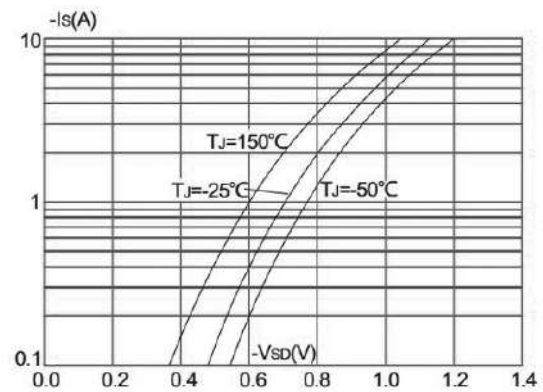


Figure 5: Gate Charge Characteristics

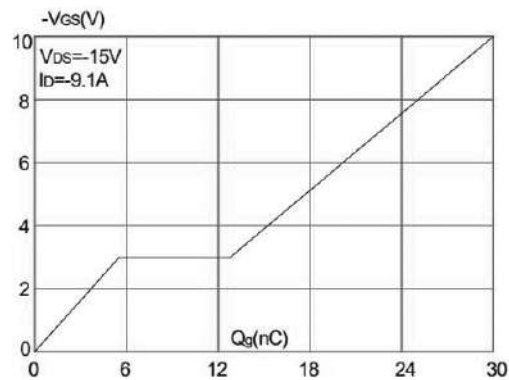


Figure 6: Capacitance Characteristics

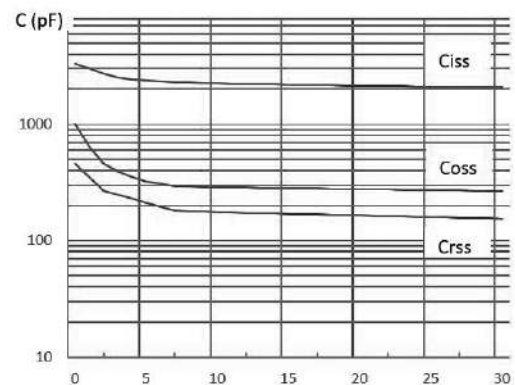


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

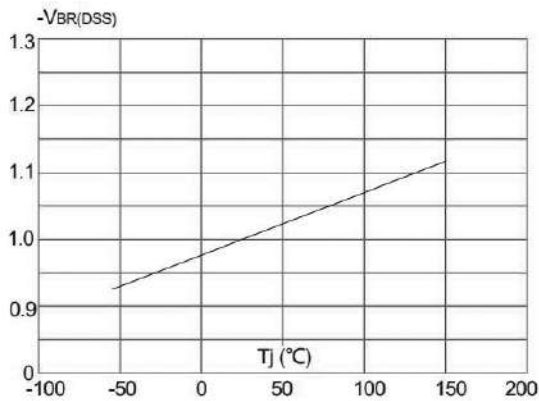


Figure 8: Normalized on Resistance vs. Junction Temperature

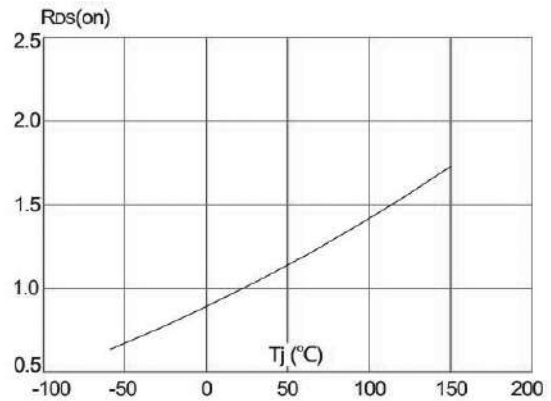


Figure 9: Maximum Safe Operating Area

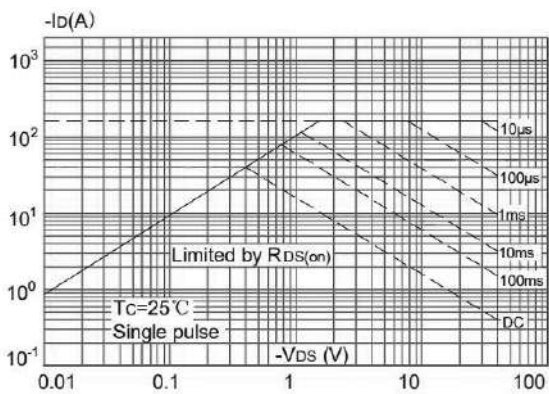


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

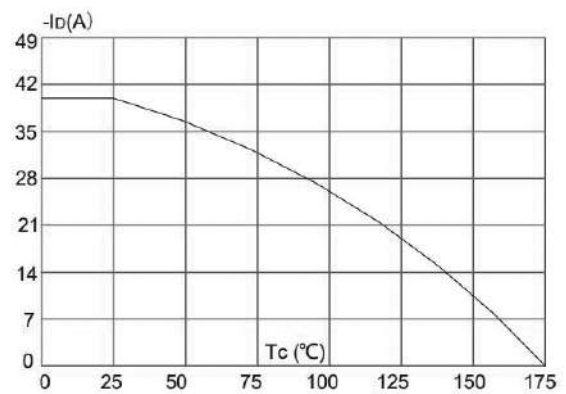
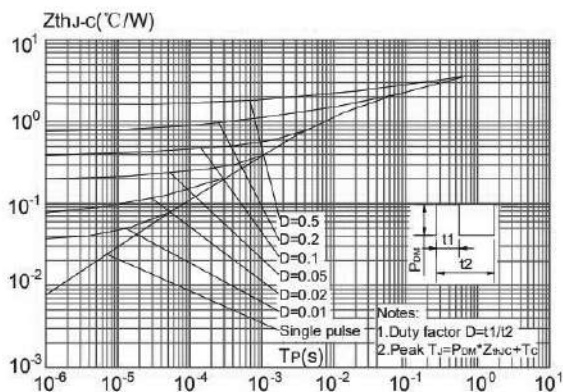
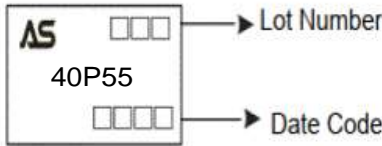


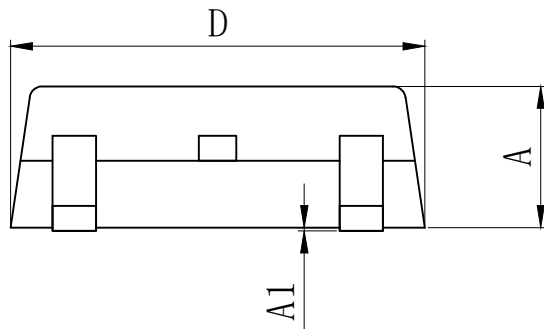
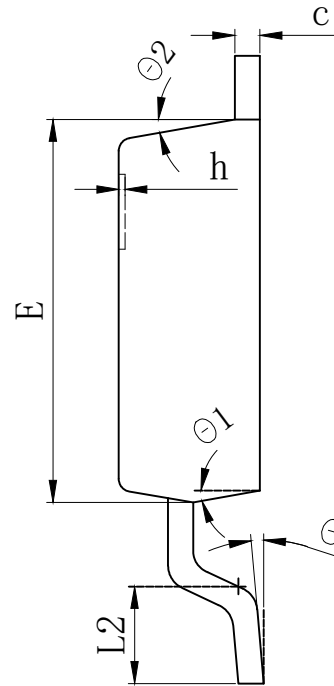
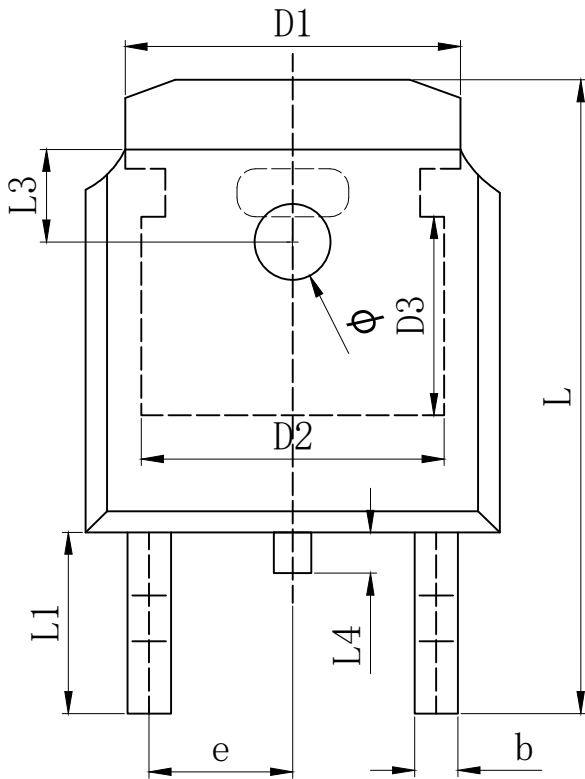
Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to- Case



Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM40P55KQ-R	40P55KQ	TO-252	Tape&Reel	2500/Reel

PACKAGE	MARKING
TO-252	 <p>AS □□□ → Lot Number 40P55 □□□□ → Date Code</p>

TO-252 Package Information


	MILLIMETER		
	MIN	Typ.	MAX
A	2.200	2.300	2.400
A1	0.000		0.127
b	0.640	0.690	0.740
c (电镀后)	0.460	0.520	0.580
D	6.500	6.600	6.700
D1	5.334 REF		
D2	4.826 REF		
D3	3.166 REF		
E	6.000	6.100	6.200
e	2.286 TYP		
h	0.000	0.100	0.200
L	9.900	10.100	10.300
L1	2.888 REF		
L2	1.400	1.550	1.700
L3	1.600 REF		
L4	0.600	0.800	1.000
Φ	1.100	1.200	1.300
θ	0°		8°
$\theta 1$	9° TYP		
$\theta 2$	9° TYP		

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